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CONFERENCE

PROCEEDINGS







MIDWESTERN STATES EDUCATIONAL INFORMATION PROJECT  
P.L. 89-10, Title V, Section 505

MSEIP CONFERENCE PROCEEDINGS 1969

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# TABLE OF CONTENTS

	Page
Introduction	
WELCOME	
Paul F. Johnston . . . . .	1
KEYNOTE ADDRESS - EDUCATIONAL INFORMATION SYSTEMS FOR THE 70's	
Ray Page . . . . .	5
MSEIP OVERVIEW	
James E. Mitchell . . . . .	11
PPBS AND MIS -- THEIR ROLE IN MANAGING EDUCATION	
Joseph A. Perkins, Jr. . . . .	15
USOE PLANNING	
John F. Putnam . . . . .	27
HANDBOOK VI	
W. Dale Chismore . . . . .	31
INDIANA'S FACILITIES COLLECTION	
Richard Morrison . . . . .	35
FINANCE STUDY IN OHIO (part one)	
Jerry W. Hammett . . . . .	39
FINANCE STUDY IN OHIO (part two)	
Ronald F. Vidmar . . . . .	41
MINNESOTA'S INSTRUCTIONAL PROGRAMS (part one)	
Harlan H. Sheely . . . . .	45
MINNESOTA'S INSTRUCTIONAL PROGRAMS (part two)	
Milan Elton . . . . .	49
WISCONSIN'S PERSONNEL DATA FOR LEA'S AND SEA (part one)	
Donald E. Russell . . . . .	57
WISCONSIN'S PERSONNEL DATA FOR LEA'S AND SEA (part two)	
Thomas Stefonek . . . . .	59
PUPIL DATA IN SOUTH DAKOTA	
Adair F. Callison . . . . .	61



# TABLE OF CONTENTS (continued)

	Page
NEBRASKA'S EDUCATIONAL INFORMATION SYSTEM	
Lawrence L. Graham . . . . .	65
AN OVERVIEW OF PROGRESS TO DATE OF THE ASBO'S NATIONAL RESEARCH PROJECT IN PPBES	
William H. Curtis . . . . .	71
PUERTO RICO EDUCATION MANAGEMENT SYSTEM	
Robert J. Hoynes . . . . .	81
INTEGRATED INFORMATION SYSTEMS	
Ronald Moir . . . . .	89
MSEIP PROGRAM-ORIENTED BUDGETING AND ACCOUNTING IN LEA'S	
Donald F. Klassy . . . . .	97
SEA CONTINUATION	
Ralph Van Dusseldorp . . . . .	103
DIRECTOR'S REPORT	
James E. Mitchell . . . . .	105
CONFERENCE SUMMARY	
James W. Colmey . . . . .	107
CONFERENCE ATTENDEES . . . . .	113



## FOREWORD and ACKNOWLEDGEMENT

Page These proceedings are published as a part of the MSEIP communication effort and as a service to conference attendees. The proceedings cover the fourth annual MSEIP conference held June 25-26 in Des Moines, Iowa.

65 MSEIP was established in January 1966, funded under P.L. 89-10, Title V, Section 505 and will terminate June 30, 1970. The Project's objective was to develop an integrated educational information system compatible among the states.

71 The MSEIP System is now documented and has been distributed nationally. Further development of system components that will be common to all states implementing the MSEIP System is in progress. States will tailor and implement their individual information systems from the MSEIP model. From the endeavour of the MSEIP it is possible 81 for any state education agency to achieve an integrated information system with compatibility among states.

89 This achievement resulted from a unique cooperation of efforts of the USOE, chief state school officers and Project personnel of the 13 participating states, Project consultants and the MSEIP Central Staff. The support, enthusiasm and devotion of 97 these and the interest and encouragement of others in education, research, and educational data processing made the MSEIP possible. Similar support is now necessary 103 to achieve the reality of integrated information systems in the states.

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James E. Mitchell  
Project Director



THE HISTORY OF THE UNITED STATES

The first part of the book is devoted to a general history of the United States from the discovery of the continent to the present time. It is written in a clear and concise style, and is well adapted for use in schools and colleges.

The second part of the book is devoted to a detailed history of the United States from the discovery of the continent to the present time. It is written in a clear and concise style, and is well adapted for use in schools and colleges.

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## INTRODUCTION

The fourth annual MSEIP conference had the dual purpose of presenting Project achievements during fiscal year 1969 and to increase and enhance communication between educators and systems people and among educational information projects and systems.

Educators and systems people were brought together for inquiry and explanation of systems, system relationships and special projects. MSEIP products presented were the revised MSEIP Documentation of Project Development and General System Design and the States' Activities Report for Fiscal Year 1969.

The revised Documentation is basically the same as the first, differing in format and with minor corrections and revisions. The states' report describes the year's activities in each of the 13 participating states relating to beginning implementation of the MSEIP System. Both publications have been distributed to all state education agencies and the USOE. Copies can also be obtained from the Project Central Office.

Presentations were made to the 143 attendees by USOE officials, chief state school officers, Project consultants, MSEIP state personnel, the Project Director, representatives of other projects and corporate data processing personnel.

This publication is a record of proceedings compiled from notes, copies of materials used or tape recordings. The presentations are in the order of the conference program followed by a list of attendees.



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## WELCOME

Paul F. Johnston  
Iowa Superintendent of Public Instruction

It is a pleasure for me to have the opportunity to greet you again at an MSEIP conference. We are, of course, all of us immensely interested in the area of information. I think back in 1951 the chief state school officers showed some wisdom - which comes at various times - when they recognized the importance of collecting data and getting the various states onto an integrated information system. This they put in the resolutions act of 1951 although it took to 1958 before many states got going with the advent of Title X, NDEA, which has gone the way of most federal programs. You know, they get you involved, give you some money and then quietly drift away to some other project. But nevertheless, I think it did get most of the states involved.

Since we got into this, I can recall the days when you could talk to the companies that produced some of the equipment to be used for data processing about making an application to education. The salesmen at that time would visit very politely and then leave and you would see them again six months later. When one came back to see how things were coming you would again raise the subject about how you could use some of the equipment rather than an adding machine and a pencil. And after quite awhile we were fortunate to find a man that finally took the bait and decided he would give us some help. And this is the way we got started in data processing in Iowa.

But as we have all gone down the road on this together one thing has led to another and I can also recall when the 13 states represented in this particular project got together and decided they would like to do something on developing an integrated information system. It doesn't seem that it was four or five years ago that the program began, but this is the fourth annual conference so it must have been about five years ago. It doesn't seem that this much time has elapsed since the 13 states' project was really formulated and they decided to move together and see how they could develop such a system.

We in Iowa, of course, have been interested and I, myself have been particularly interested, at one time more so than at the present. Now all I have to worry about are what federal funds we aren't going to get so we know what sort of shifts to make in personnel. But I think this is a common problem to all the 13 states. Nevertheless, as we've gotten into this project in data processing here in Iowa, I feel like the first generation rather than the third generation.

One of the intriguing aspects of developing a data system is that over the 18 years of working with the USOE we've never quite been able to agree on what information is basic. We all want to collect so that we can resolve our problems at the local level and give them the information they need and to have the information we need at the state level, and then also to meet the demands and needs of the national level.

We've seen a lot of changes in the directions and the approaches, and I suspect this is going to continue. In regard to our hopes and aspirations here in Iowa so far as data processing is concerned, as we develop a total system we would like to



see - although changes in equipment may change some of this - about 15 centers over the state which would tie in with our area vocational school districts giving them facilities for training personnel and also providing us an information network. We think of it as a pipeline around the state with about 15 or 16 spigots to which we can connect all of the educational systems of the state for the transfer and flow of information around the state as needed. And the day that many of the school people are looking for is when some of the reports of the state department can be changed and put into a form which they can immediately put on the pipeline and into the department and also in a short time get back some compiled data they can use for their own operation. This type of thing is going to happen, we've got a start on it - and a good start, I believe.

Probably the weakest link in this area at the moment is the state department, not the progress that is being made out in the state. We gather information all the time and we have more information in our files than we are making use of. This is a constant problem. It doesn't do us any good to collect material and have it in our files if we're not in a position to make use of it. Basically, we need to get the information that we need, the local schools need, and that the federal government needs, and get it into a useable form. In Iowa, our philosophy is that if we've collected information for two years and haven't made use of it by then we think it should be taken out of the files and not collected anymore until such a time as we need it and are going to use it. Now this is a little difficult for the staff to understand because most of them have always collected the information they think they would like to have in case they might want to use it. Now at the time they are producing the forms, they are convinced that they need this information, but as you start to ask them what they need it for and how they are going to use it, they are rather nebulous, and two or three years later you still ask them what they are going to use that information for and you still don't get an answer. I think it is incumbent on all of us, in the state department especially, to take a look at the information we collect and the purpose for which it is going to be used.

The development of the 13 states' project shows, I think, tremendous progress in having the involvement and enthusiasm and the work that has gone on in the development of educational information. And when we get through the Project - which people tell me will be sometime in the near future - we will have the stimulus and the framework to establish information systems, and I'm sure it's going to give all the 13 states and the other states in the nation a source of information that we can all use together and come closer to having an information system that is meaningful between states and we can compare data and really have some things that we can work with.

Now, to say this is going to happen immediately is some sort of dream because I'm sure it isn't, and with the changes coming about in education and that will be coming about we're going to need different types of information for the future if we're going to make the right kinds of decisions. So this is going to be in a state of flux as it has been in the past. But I think we are on the right approach in trying to get some uniform approaches to collecting this type of data.



I was talking to one of the representatives of data processing equipment and I said I was going to make an announcement to you people this morning that I momentarily expected the data processing people to produce the equipment to do the same types of things for schools and education departments that the auto makers and appliance people have done in their particular fields. In other words, if you wanted a refrigerator and stove in home economics they would put it in at a nominal cost; and in the driver education program they would let you have a car for a dollar. And so I said I was going to announce that these companies were going to announce that they would let us have the data processing equipment for a nominal fee of a dollar or a hundred dollars a year. He thought such an announcement might be a little premature, but hopefully we can keep on thinking about the day when this type of thing may happen, but don't lose any sleep over it.

Again it is a pleasure for me to have the privilege to welcome all of you and to see so many of my friends that are involved in this Project and to have the chance to renew some acquaintances. It is a pleasure to have you in Iowa and I know by this program that we are in a position to have a good discussion of the development of the data collection of the five major areas and the development of the systems approach to the collection of data. I hope this will be a very meaningful conference for all of you even though I'm sure you're not going to learn everything in this room. Some of the best discussions are going to be over coffee and in the evening when you get the chance to exchange ideas; this is one of the important aspects of any conference. Again, welcome to the State of Iowa.







KEYNOTE ADDRESS -- EDUCATIONAL INFORMATION SYSTEMS FOR THE 70's

Ray Page

Illinois Superintendent of Public Instruction

I sincerely appreciate the opportunity to share with you a few comments regarding the impact of the Midwestern States Educational Information Project on the state education agencies throughout the nation.

The involvement of personnel from the state education agencies through the 13 midwestern states and the accomplishments derived from this model systems approach to information management will have a profound effect on school accounting in the future. The impact of the "systems" approach to information collection, processing, and dissemination has been implanted in Illinois in the vocabulary and planning of many educational administrators. A few statistics relative to the "information explosion" should influence the persons who may not be convinced of the need for a "system" such as you people have been developing.

For ages, man has sought more information about himself and the world in which he lives. This is more true than ever; however, an additional need has come to the fore. It is that of learning how to use more effectively the knowledge we now have.

Even though scientists today publish no more per man than those of the seventeenth century, more scientific information is published because the number of scientists has doubled about every ten years for three centuries. The number of scientific journals published has doubled in the fifteen-year period following 1950. Progress in science and technology is documented by sixty million pages of government and private industrial reports, while the amount expended on research and development in documentation has increased sevenfold in approximately the last five years. Scientific data doubles every 10-15 years (at the present rate) and new federal records are being created at a rate of 4.5 billion per year. In addition, United States businesses store an estimated trillion pieces of paper in file drawers, while federal, state, and local governments accumulate twice that amount.

The only solution to the management of information storage and retrieval is the effective utilization of electronic data processing. It has been stated that, during the last ten years, electronic data processing (EDP) equipment has become ten times smaller, 100 times faster, and 1,000 times less expensive to operate.

Schools and municipal governments have lagged in adapting the computer technology to their functions. As late as 1965, one survey reported that almost 44 percent of the municipal governments studied had no EDP equipment, did not use an electronic data processing service bureau, and did not intend to do so within the next five years. Of the cities that used computers, tabulation installations, or service bureaus, most concentrated on business applications.



In an amazingly short time, great changes have occurred within state departments of education. The staffs have been doubled in many cases as has been true in Illinois; and state departments have assumed a leadership role in addition to performing the necessary regulatory functions.

These changes in the states have been made because education has become a major business. More money is now being spent on education than ever before. These expenditures have increased because the American people believe in education. From a financial viewpoint, education is simply a good business investment.

Due to the huge expenditures of moneys on education, and the expansion of the educational enterprise, the public has begun to ask for a detailed accounting of funds. They want to know if moneys are being used efficiently, prudently, and economically. The federal government is supporting this position because of the tremendous rise nationally in the support of public education.

Many departments of the federal government have adopted a new program-planning-budgeting system (PPBS). Every effort is being made to make the entire federal budget conform to this system which is intricate and comprehensive. It requires, first of all, that every program of government spending should have definite objectives. It assumes that every program is designed to assure a specific accomplishment in a definite period of time. Secondly, it requires some measure of effectiveness.

There are those in education who say that this is impossible in dealing with educational programs. They maintain that it is impossible to determine what happens to a student as he progresses through an educational program; they say it is too complex and too elusive to measure. But certainly there should be enough expertise in the profession of education to evaluate a program in order to determine if it is meeting its objectives.

School districts in the future will be required to prove to the lay public that the spending of dollars is improving the status of the students progressing through the educational programs. This will only be possible through the utilization of EDP in evaluating the expenditures in detail for every program offered by school systems and linking this with a comprehensive evaluation of the achievements and accomplishments of the students.

In spite of the slow start, there will be significant changes in attitude and utilization of computer-based EDP in local schools as well as in municipal governments. It has been recommended by leading educators that all new school plants be designed with wiring, electrical power, and space required for the operation of computers, or at least computer input-output terminals connected to a central processing unit. This trend toward EDP will mean that mountains of paper work and reports will diminish as instant retrieval, through conveniently located visual display units or via print-out documents, becomes available in every principal's office and in other locations in the school plant.



School libraries can be quite different. Books on almost any subject can be made available to even the most distant, isolated school plant via teleprocessing. The most remote school plant in a district will have the same library information sources available as those in the best equipped school library in the nation. Some day, in the not too distant future, every library, and most classrooms, will contain computer-based units which will present upon command the information desired by students.

When EDP comes of age in schools, computer terminals will be at least as common as television sets are presently. At present, high costs of programming and equipment rental have confined computer-assisted instruction to experiments. However, this is only a short-term effect; over the long term, computer-assisted instructional sequences for many subjects and for learners with different problems will be available in abundance.

To those who may believe that a computer terminal in every classroom is not in the foreseeable future, it is well to point out that one manufacturer now envisions a small computer-console linked with a large central processing unit serving many stations, as common as a household appliance. The "computer-in-the-home" will be as common as the home television, and be a component in the family's cultural entertainment center along with the radio and tape recorder. It is technically feasible, in the foreseeable future, to link the home with a central-computer utility company that may help with family budgeting tax calculations, schoolwork, travel reservations, and mail-order shopping service.

Classroom computer terminals may modify approaches to teaching, but they will not make teaching an extinct profession. The potential value of any technological development in education will always be dependent upon the professional practitioner's insights and skills. Computer-assisted instruction will be another means of expanding the teacher's art rather than a substitute for professional judgment. Computers may re-define the roles of teachers so that more emphasis will be placed on diagnosing learning needs and guiding the learning experiences of the pupil and less on purveying facts which can be done by machine.

EDP will alter the appearance of the administrator's office as well. The stack of reports and other documents which find their way to a desk, filing cabinet, or bookcase, and from which it is difficult to retrieve information, will tend to disappear. A visual display terminal with immediate access to a host of significant data in the information systems will yield as much and more as all the reports and documents. Horizontal work surfaces such as large desks may be reduced in size, and the office will tend to be more like a large conference area than a forbidding sanctuary.

Third-generation equipment will make feasible the creation of an administrative information facility as an adjunct to the superintendent's office. Large storage capacities for such hardware make it possible to create a special "administration information processing system" to produce regular and periodic demand reports needed to review the progress in the organization and for decision making. A lot of the uneasiness that stems from "not knowing where we stand" will tend to disappear as looking into the future needs of the district and simulating the consequences of



courses of action become more feasible. The computer provides a way to "try out a decision" through the use of simulation and mathematical models. The use of the systems approach for school administration will be facilitated greatly by third-generation computer facilities.

However, the glamour that surrounds electronic data processing equipment can degenerate into a worship of gadgetry. It takes more than a machine to produce a technological revolution. People in a profession must be sensitized to its possibilities and prepared to use the promising vehicle. Readiness to harness computer technology to the improvement of education and its administration goes beyond simply comprehending the computer and how it works. EDP is a vehicle for doing better many things which we are doing currently and executing other tasks impossible without it. This does not happen automatically or without expenditures of energy and resources.

A knowledge of theory and skills and insight into the development of models are necessary to maximize the potential of the computer. It is significant that those fields with the strongest theoretical base have made the best and most sophisticated use of computer systems.

If school systems are to make maximum progress in the full utilization of EDP, it will be necessary for their professional personnel to acquire, as soon as possible, the insights and skills necessary to the implementation of computer-based information systems. It is particularly important that future school administrators gather an intimate knowledge of the potentialities that are in data processing systems and their operational demands. No program for preparing school administrators worthy of its name can afford to neglect the study of this important electronic tool. Institutions of higher education presently preparing school administrators should develop adequately staffed programs and obtain access to computer hardware necessary for creating high level skills among future and present school administrators in the comprehension and use of computer systems. This is an urgent need which must be satisfied, as soon as possible, if education is to keep pace with an emerging technology.

It is apparent that computer technology is vitally important to the improvement of education; and, therefore, it is not prudent to wait until a new generation of administrators is prepared to implement the technology in the nation's schools. School boards should provide opportunities for administrators to attend inservice seminars, conferences or workshops dedicated to the promotion of EDP knowledge and skills. It would be highly desirable to have all present administrative practitioners gain a working understanding of EDP in as short a time as possible. Computer technology is spreading rapidly, and the schools must also move rapidly to stay abreast of developments.

Every state and local school operation should be a part of some data processing system of a sophisticated nature either on its own or through cooperative arrangements with other school districts in the area. The continuing development of EDP as a vehicle within schools to help cope with administrative problems on mundane and sophisticated levels, as well as with instructional improvements, is something which should be furthered and not neglected for any longer than necessary by the schools.



State departments of education should be interested in furthering EDP operations within each department as well as within local school districts for many reasons. Reports prepared by local districts for the state education agency could be less burdensome, if more up-to-date, and perhaps even fewer in number if a statewide educational information center were created with a direct computerline between local schools and the state education agency. A direct connection through teleprocessing operations between state department computers and local school units to exchange information is within the realm of feasibility. The same kind of network is possible on a regional and national basis as well. Every state should give serious consideration to the design of a wide educational information network which would connect local schools and the state education agency. There are federal decisions which can stimulate the growth and development of EDP in public schools. One action would be federal contributions to facilitate the purchase and utilization of data processing equipment in state and local educational agencies.

The computer will have a profound impact upon instruction and administration in education. It can help the teacher open creative approaches to the individualization of instruction, long a goal among all educators seeking to improve schools. It can enable the administrator to arrive at more prudent decisions in a much shorter period of time than previously thought possible. Many of these EDP developments are already under way in school districts and state departments of education. There are pedagogical pioneers or risk takers in education as well as in other fields. The education professions will reap benefits from the experience of the early workers in educational data processing systems.

As was stated previously, the impact of the Midwestern States Educational Information Project on education throughout the nation has been considerable. It would be safe to assume that every state of the union has been exposed to the work thus far accomplished by the Project personnel. The Central Staff of the Project, first under the direction of Dr. Bliss and most recently Dr. Mitchell, are to be commended for their achievements. However, the fact remains--credibility of the MSEIP operational model has not yet been demonstrated. This is the task that faces us during the coming years.

The "MSEIP Documentation of Project Development and General System Design" published in July, 1968, marked completion of the initial phase toward the ultimate objective. The development and documentation of the detail systems design and the subsequent implementation of the product still remain. To be sure, this is a responsibility of all involved--the participating states, Central Staff, U.S. Office of Education, and many others.

This, then, is a charge to the participants of this conference... First - let us review the past, learn from it, and then move on. Second - let us identify the most efficient method for pooling our resources so that the remaining phases of the Project can be accomplished and the model proved. And, third, let us keep in mind that the ultimate objective is the improvement of the educational process through which the children of our nation learn and in which our leaders are born.







## MSEIP OVERVIEW

James E. Mitchell

Project Director

It is with a great deal of pleasure that I welcome you to this MSEIP conference. I would like to compliment each of you for taking time from your busy schedules to participate in our program of activities.

I'm going to take a little time first to introduce some of the people here that have been involved in the development of the MSEIP System. First, I think we're especially fortunate today to have with us three chief state school officers: Paul Johnston of Iowa who presented our welcome; Ray Page of Illinois, our keynoter; and Richard Wells of Indiana. (At this time Project consultants and committee members in attendance that had been actively involved in the development of MSEIP were introduced.)

Any complete overview of the MSEIP must go back farther than the beginning of the Project itself. The beginning of MSEIP is related to the Council of Chief State School Officers meeting in 1951 that led to the development of the handbook series. And to the NDEA Title X developments from 1958 followed by MIDWESCRS in 1961 and CEDS and BEDS in 1963. The enactment of P.L. 89-10 in 1965 was the final preparatory development to the establishment of MSEIP in 1966.

The Project itself can be briefly reviewed by looking at the three previous annual conferences. Our first, in June 1966, was organizational in nature. It resulted in the establishment of our five subsystem committees following our funding in January 1966, the establishment of the Policy and Coordinating committees and the hiring of a Central Staff.

A year later at our second conference we were able to present the accomplishments of one year of operational activity. The subsystem reports at that time provided tentative lists of data items and definitions.

By the time of our third conference, August 1968, the MSEIP system design was completed and presented in the MSEIP DOCUMENTATION.

Today, as we meet for our fourth annual conference, we have a two-fold purpose. First to present our FY 1969 products and second, to bring together educators and systems people for inquiry and explanation of systems, system relationships and special projects.

Our products for FY 1969 are the revised Documentation and the report of states' activities. The revised Documentation is basically the same book, different in format. It is still a guide to states in implementing their own integrated information systems based on the MSEIP general system design. This general procedure was approached during FY 1969 by each participating state as feasible in relation to the state's resources and the status of the information system in use.



The States' Activities Report for FY 1969 includes a report by each state of its beginning implementation activities and its long range plans. These state activities were carried out with state and MSEIP funds. Such Project funds were contracted specifically for beginning implementation of the MSEIP System. Each state determined its activity area and totally, all subsystems were included.

Also, work was done in evaluation and coordination of collection procedures, forms control and development of manuals. Today's afternoon program will present particulars of several states' 1969 programs.

A summary of our internal activities this past year includes in-state visits to assist with states' implementation activities; communication with other groups and projects; publication of Project materials; meetings of the Policy and Coordinating/Liaison Committees; and preparation of the continuation proposal for FY 1970.

While taking an overall look at our Project it is, I think, an opportune time also to reflect on some of the problems. A continuing problem is the image of the SEA's. As agents of change we have not always overcome the educator's traditional resistance to change. In assuming a stronger leadership role it is necessary that our attitude be one of looking forward to challenges. Our leadership role and service role both require long range planning in the coordination of tasks and people to perform them. We can no longer afford to be unaware of what is happening or to ignore our rightful position in dealing with change and growth. We need educators at the state level - educators as leaders, not followers.

It is first necessary that we plan by determining our real needs in terms of output - not inputs. Each SEA must explain its needs in detail to its local educational administrators and to its data processing division. The SEA should assume responsibility for compatible data at all levels; while at the same time, it must guard against dictating what data the local agencies collect. It should be possible for the data needed by the state to be gathered as a by-product of the LEA operation. The SEA is further responsible for establishing and explaining the data flow in and out of its organization.

Another problem in the development of an information system has been, and is, the need to satisfy all the states in regard to their laws, rules, regulations, and traditions. This problem relates to problems of semantics, definitions, and communications, both within the states and among them, and also with regard to related projects.

The problem of personnel training is, of course, bound up with funding and staffing problems. However, as SEA personnel become more knowledgeable about data processing, the mystery of computers will shrink, and SEA's will be better prepared to take a more objective look at their information requirements. They will more critically analyze what is collected and how it is used.



However great the problems of educational systems development still confronting us, we can see that progress has been made during the years of the Project. Some of my own observations and conclusions in this regard are:

1. SEA's are more aware of their problems and weaknesses.
2. Better long range planning is being undertaken.
3. Communications among SEA's have improved greatly; we recognize that some of our problems are common and can be approached through combined efforts.
4. Better coordination between SEA and local or intermediate agencies as the feasibility of time sharing and the need for compatibility become more apparent.
5. In-service training is increasing as we realize the need for SEA personnel to be conversant with systems procedures and to understand the potential and relevance of data processing to their own work.
6. Among the Project states, the MSEIP System has provided a beginning from which states' educational information systems can be developed.
7. It is encouraging to note that one of the first concerns of the states is to take a more objective look at their data collection.

So, in looking over the Project we view a period of combined effort and worthwhile results. Our job is not done; it remains necessary that we communicate and cooperate beyond state lines even as states proceed with their individual systems. Collectively we are constructing the base of a compatible interstate educational information system - an effort which shall long endure.



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## PPBS AND MIS -- THEIR ROLE IN MANAGING EDUCATION

Joseph A. Perkins, Jr.

Principal; Peat, Marwick, Mitchell Company

In the years since the administration of education has become an accepted discipline, there has been little or no significant change in how we budget and manage the resources committed for education. Management tools developed for other governmental operations and for industry are now being retailored to meet the increasing problems of resource management in education. My purpose of today is to examine two of these tools, PPBS and MIS, and their relationship to each other.

Increasing public school expenditures have led to the search for ways to use more effectively and efficiently the available resources. Tax and manpower resources which are needed to support public services are clearly limited. Because public education has been called upon to solve economic as well as social problems, expenditures for education will continue to claim a significant share of the tax dollar. Since these expenditures are rising and available tax resources are being stretched, the public is demanding better justification of education costs. The growing unrest among taxpayers is evidenced by the increasing failures of levy and bond issues elections, some causing the dramatic closing of schools.

For years, school administrators have done a poor job of trying to tell the story of budget needs to the public. No real effort has been made to talk about the cost of educational programs and the effectiveness of our processes and methods.

For years school officials have been able to report the transportation cost per pupil/mile, per bus, and per route. Similarly they know the costs of cleaning, heating, or maintaining a school building, feeding a child, or running an athletic program. However, very few can tell what it costs to raise a child's reading or computational skill to a higher level, nor can they say if more or less should be spent to achieve this new level in a longer or shorter time, nor are they sure if they are communicating to the taxpayers these objectives in relation to costs.

Against this background, school officials are becoming more cognizant of the need for a more responsive and timely system which will effectively communicate the cost of educational outputs. They need a system which will allow for better decision-making, alternative selections, planning, and forecasting. PPBS--Planning, Programming, Budgeting System--appears capable of meeting these needs.

### PPBS DEFINED

A Planning, Programming, Budgeting System (PPBS) is an integrated system that provides school executives with better information for planning educational programs and for making choices among the alternate ways in which funds can be allocated to achieve the school district's established objectives. It aids the decision-making process by identifying goals and objectives, the programs to reach these objectives, the methods of evaluating the programs, and the cost of operating them.



The analysis and evaluation which are central to the implementation of a Planning, Programming, Budgeting System require identification of the public school end-products. Analysis requires that activities be considered as they relate to each other. Therefore, the search for alternative ways of meeting defined objectives are considered through various combinations of personnel, facilities, and materials to bring about the desired educational product.

The important question routinely asked in the course of PPBS implementation is, "How much additionally would be gained by way of achieving the defined objective through spending more or less for the purpose?"

Within a PPBS, the familiar processes of program development and budgeting are explicitly combined. It is a system in the sense of centering on program goals, objectives, and evaluation.

The value of PPBS in education results not from the individual techniques that have been developed, but from the integration of them into a system and their procedural application to educational decision making.

#### PPBS CONCEPTS

In an educational setting, PPBS is based on three concepts:

(1) The existence in each school district of an analytic capability which carries out continuing in-depth analyses by reducing objectives and programs to quantifiable units so that these programs can be evaluated.

(2) The existence of a multi-year planning and programming process which uses an information system to present data in meaningful categories essential to the making of major decisions by school administrators.

(3) The existence of a budgeting process which can take broad program decisions, translate them into more refined decisions in a budget context, and present the appropriate educational program and financial data for action by the superintendent of schools and the board of education.

#### PPBS ESSENTIALS

Further, PPBS in education must have the following four essentials:

(1) An output-oriented educational program structure which presents data on all of the operations and activities of the schools in categories which reflect the schools' goals and objectives.

(2) Analyses of possible alternative objectives of the schools and of the alternative programs for meeting these objectives. Many different techniques of analysis will be appropriate, but central to this step should be analyses in which alternative educational programs will be compared with respect to both their costs and their benefits.



(3) Adherence to a time cycle within which well considered information and recommendations will be produced when needed for decision making and for the development of the budget and educational program.

(4) Acceptance by line officials, with appropriate staff support, of responsibility for the establishment and effective use of the system.

#### PPBS PRODUCTS

The products of such a system in education will include:

(1) A comprehensive multi-year program and financial plan systematically updated.

(2) Analyses of program results related to objectives prepared annually and used in the budget preview; special studies in depth from time to time; and other information which will contribute to the annual budget process.

The overall system is designed to enable each school district to:

(1) Make available to board members and administrators more concrete and specific data relevant for their broad decisions.

(2) Spell out more concretely the objectives of educational programs.

(3) Analyze systematically and present for the board's and the superintendent's review and decision, possible alternative objectives and alternative educational programs to meet those objectives.

(4) Evaluate thoroughly and compare the benefits and costs of educational programs.

(5) Produce total, rather than partial, cost estimates of educational programs.

(6) Present on a multi-year basis the prospective costs and accomplishments of educational programs.

(7) Review objectives and conduct educational program analyses on a continuing, year-round basis, instead of on a crowded schedule to meet budget deadlines.

#### PPBS CYCLE

The schematic diagram, Figure 1, shows the PPB system cycle. Starting at the left side of the diagram, the elements are described below:

(1) The needs of the community must first be identified. These are the needs of the children, adults, business and industry, other governmental units, and all elements of the community.



PPBS CYCLE

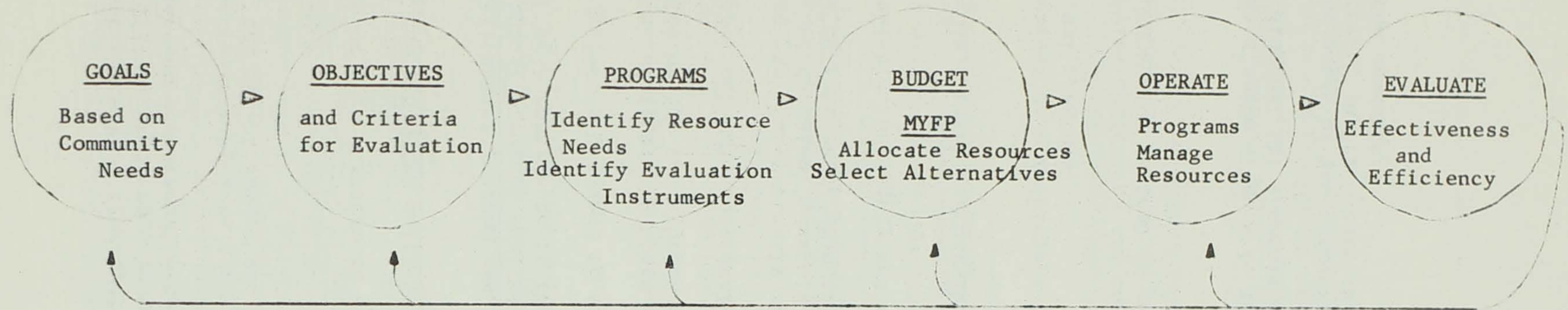


Figure 1  
COMMUNITY NEEDS

Children  
Parents  
Governmental Units  
Business  
Industry



(2) These needs must then be translated into goals. Goals are general statements of purpose or intent, they are not related to a specific period of time, and they are not quantifiable or measurable in any way other than a broad subjective review. These goals need to be arranged in hierarchial structures in order that they may be broken down into manageable units. A typical goal structure is shown in Figure 2.

(3) Objectives, which are desired quantifiable accomplishments within a time framework must next be developed. These objectives must:

- . Relate to a goal
- . Be measurable
- . State the method of measurement
- . Indicate the evaluative criteria
- . State the time period for achievement.

A typical objective structure is shown in Figure 3.

(4) When the goals and objectives have been developed, approved, and documented, it is necessary to develop programs to accomplish the objectives. In most school districts these programs already have been documented in the form of course outlines or curriculum guides and quite often include some objectives. At this point, the evaluative instruments which will be used to assess the program operation should be identified.

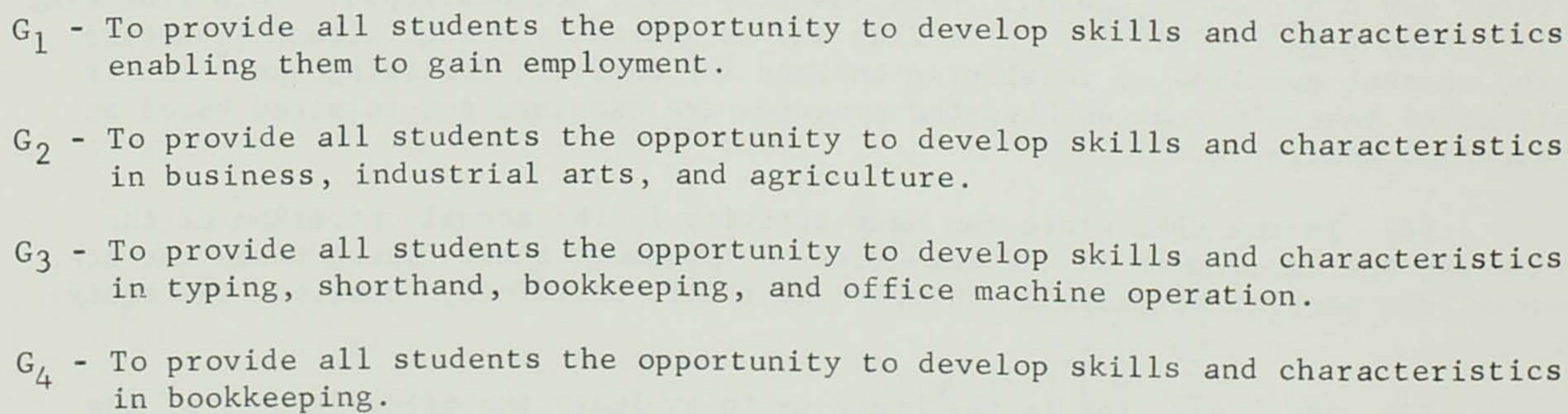
(5) The dollar figures must next be developed in the form of a budget for the approved programs. Not only the budget for the next year is prepared, but financial plans for a period of several years, usually five, are developed. This financial plan is termed a Multi-Year Financial Plan and is generally a significant departure from the current practice of developing budgets for only the following year. It is at this point that alternative budgeted programs are examined and selected based on the resources available.

(6) In the PPBS cycle the next activity is the actual operation of the programs and the management of the resources to implement them. These resources are, of course, the people, places, and things--the staff, buildings, supplies, and equipment.

(7) The final step in the cycle is to evaluate the effectiveness of the program operations against the criteria established for the various program objectives. The process then recycles using the evaluation information to determine whether objectives were attained or were not attainable because of either program or resource limitation.

A PPB system is a constantly changing process. The initial effort to start a system requires that all current programs and activities be subjected to this systematic analysis process. As ineffective programs and activities are purged from the system their replacements are subjected to the same process.

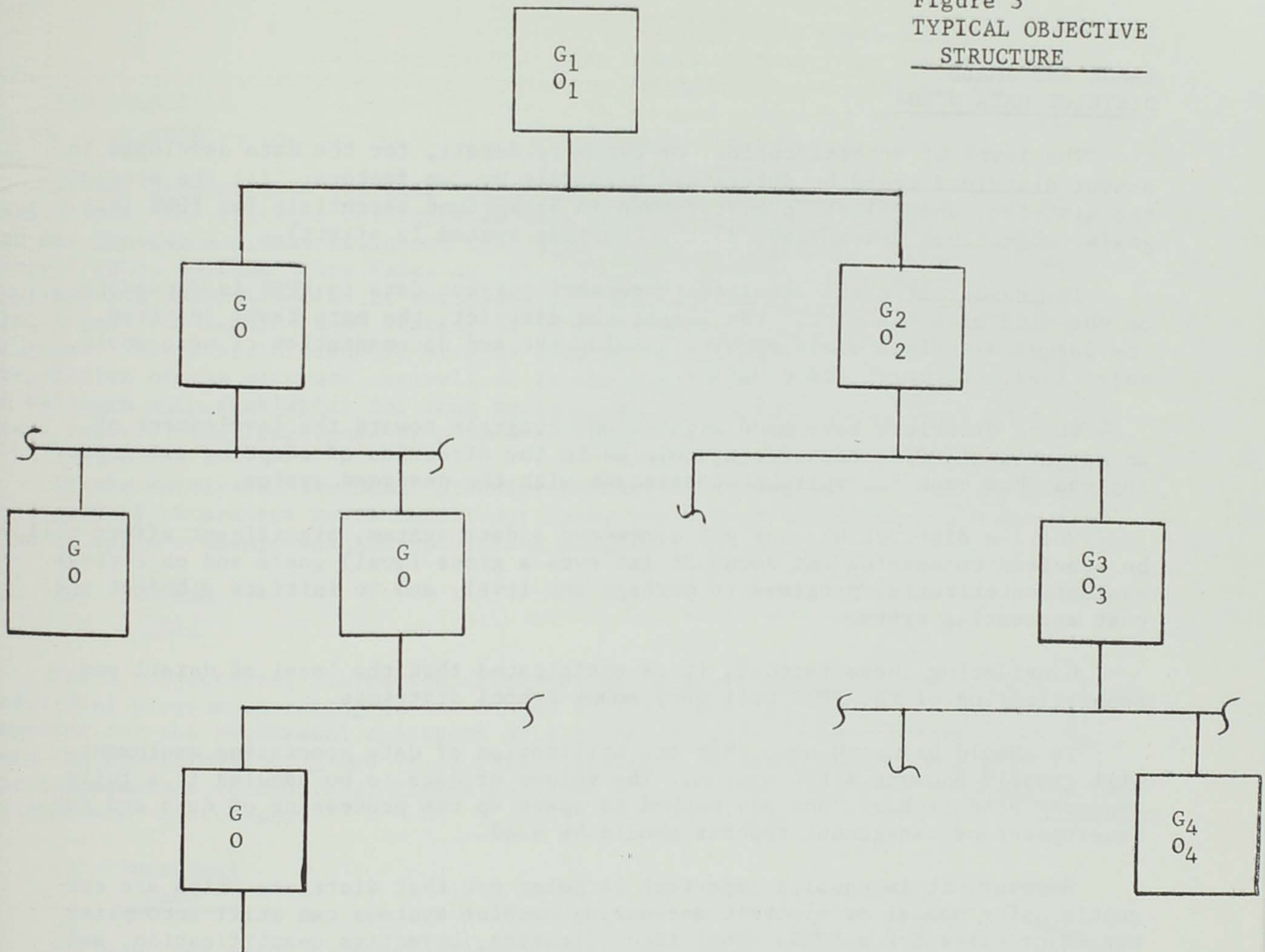




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Figure 3  
TYPICAL OBJECTIVE  
STRUCTURE



O<sub>1</sub> For ninety percent of the graduating seniors that wish to enter the labor force to gain employment in business within three months of graduation as measured by a district survey.

O<sub>2</sub> For ninety percent of graduating seniors that wish to enter the labor force to gain employment as desired in business, industrial arts, and agriculture within three months of graduation as measured by a district survey.

O<sub>3</sub> For ninety percent of the business curriculum students to meet the following standards:

Typing - 40 words per minute as measured by the IBM test with 90 percent accuracy

Shortland - 60 words per minute as measured by the Gregg test with a 2,000 word vocabulary

Bookkeeping - demonstrate understanding of journals, income statements, and balance sheets as determined by classroom tests

Office Machine Operation - mean score equal to national average on NCR tests

O<sub>4</sub> Upon course completion ninety percent of students will be able to accomplish the following based on classroom tests:

State and understand the basic accounting equation of double entry bookkeeping

Understand the function of and make journal entries

Understand three depreciation calculation methods



## LARGE AND SMALL DISTRICT DATA NEEDS

The level of sophistication, or depth of detail, for the data developed in school districts would be determined primarily by two factors: (1) the size of the district, and (2) the progress made in background essentials for PPBS (e.g., goals, objectives determined, cost accounting system in effect).

The number of tasks required to convert current data to PPBS is dependent on the size of a district: the larger the district, the more tasks required. The larger districts would require development and documentation of more goals, objectives, criteria, and programs.

Where districts have made significant progress toward the development of an operational PPBS, the effort would be in the direction of adapting and improving what has been accomplished consistent with the designed system.

Where a district has not yet commenced a data system, significant effort will be required to develop and document (at even a gross level) goals and objectives, evaluation criteria, programs to perhaps one level, and to initiate a budget and cost accounting system.

Considering these factors, it is anticipated that the level of detail and sophistication of the PPBS will vary among school districts.

It should be noted here that the utilization of data processing equipment will greatly enhance a PPB system. The volume of data to be handled in a fully expanded PPBS is huge, and any method to speed up the processing of data and the development of management reports should be used.

However, it is equally important to point out that districts which are currently using manual or electric accounting machine systems can still accomplish the major steps for a PPBS. Goal identification, objective quantification, and evaluation criteria do not mandate data processing.

Costs can be kept by broader programs and levels. Many districts have done this for years without the aid of EDP. It may mean the expansion of the existing accounting system by the addition of more individual accounts, but many school districts have been regularly keeping detailed cost data on their operations.

## MANAGEMENT INFORMATION SYSTEMS

The investigation of current information requirements and operating systems usually reveals varying degrees of detail in local school districts.

Five major categories of data must be developed in order to estimate, evaluate, and report within the multi-year framework of a PPB system. They pertain to (a) pupil, (b) programs, (c) personnel, (d) facilities, and (e) finances.



(a) Pupil  
Data

It has been pointed out that one of the major ingredients of PPBS is program evaluation. The criteria developed in each district to evaluate programs will vary and may include not only classroom test results, but other pupil statistics such as dropout rate, college entry rate, or return-to-school rate. The school districts implementing PPBS will find it necessary to record in a consistent format such statistics, and report these statistics in specific time frames and against specific programs. The districts should also be prepared to utilize these statistics in the preparation of new programs, as well as in the evaluation of current programs, and to maintain such statistics for long periods of time to develop behavior patterns, trend reports, and long-range program evaluations.

In the multi-year financial planning portions of PPBS, the districts will find it necessary to project pupil enrollment data, not only in number of students, but also in socio-economic changes within the community.

(b) Program  
Data

Goals, objectives, evaluation criteria, and program memoranda pertaining to each individual program operating in the school district must be recorded, stored, and reported for the successful operation of a school district PPBS. This is true for both the educational programs (i.e., math, English, social studies), as well as the special programs (counseling, career guidance and ancillary services, transportation, maintenance, custodial).

(c) Personnel  
Data

At least two major clusters of information on school district employees are required by a PPB system: payroll information and assignment information.

Within the PPBS framework, a district may choose to distribute the first grade teachers' pay to several different first grade programs, while charging all of the kindergarten teachers' salary to a single preschool program. For a high school Spanish teacher who works two periods a day as a counselor, who is also assigned as an assistant football coach three months of the school year, and teaches driver training on Saturdays, specific portions of this teacher's salary must be pro-rated to the Spanish program, the counseling program, the physical education program, and the driver training program. The recording of personnel assignments is a necessary part of PPBS.

(d) Facilities  
Data

The expenses involved in the operation of each school district facility must be recorded by specific facility in order to accommodate the information storage and reporting requirements of a PPB system. This will require the development of location



and sublocation codes and the assignment of these codes to such items as inventory supplies, maintenance projects, and construction projects in the school district.

### (3) Financial Data

In addition to the program-oriented budgeting and accounting, the traditional function-oriented budgeting and accounting should be maintained by responsibility levels (organizational units), fund, and functional areas as long as they are required. It should be emphasized that in order to preserve data comparability for state, federal, and local analyses by existing functions--such as Instruction, Administration, and Transportation--budgets can be cast in both ways, i.e., by line item within the function format and in a program format.

A caution should be inserted here to allay the fears of educators who are unfamiliar with school fiscal affairs. Accounting, enriched by its siblings of cost accounting and budgeting, is crucial for the successful operation of PPBS, but it is merely a tool of the organization, not the end. Educational decision makers must guard against forming conclusions about instructional activities solely on the basis of costs. Costs must be known better than they normally are in schools, but costs must be weighed against benefits and values held by citizens for the development of their children.

### MANAGEMENT OF LOCAL SCHOOL SYSTEMS

PPB systems and management information systems must be designed for local educational agencies to first provide for good management of the resources and programs. Information as an output from these systems must, as mentioned earlier, allow for better decision making, planning, alternative selecting, and forecasting. Information for reporting to the state and federal level should be an automatic by-product of these systems. As more and more states and the Federal Government move to adopt PPBS for managing at their respective levels, it would be desirable to have the information output from the local agencies be an automatic input to the higher levels.

### CONCLUSION

PPBS provides a new approach to an old problem--that of better utilizing our limited resources in hope of improving the learning process.

School administrators hold one of the most demanding jobs in the Nation. The selection of program alternatives is no less promising in its potential payoff at the school district level than at state and federal levels, but to date, there is little application of PPBS among school districts throughout the Nation. This is caused by (1) the lack of specific knowledge of the PPBS, its associated techniques, and its potential rewards on the part of most school administrators and (2) the shortage of qualified analysts and selected personnel to design, implement, and operate successful PPB systems.



Although these deterrents force some administrators and boards of education to shy away from investigating PPBS, it is encouraging to see others pioneering with this new tool. Technical advisory help is now available to school districts that wish to venture. California is involved in the development of a model PPBS for all local districts of the State. Miami School System in Florida has a joint PPBS project with the Association of School Business Officials, and several individual school districts have initiated projects. Workshops and in-service programs are now possible for school officials desirous of knowing more about the tool.

If education is to hold a priority for expenditure of tax resources, and since the American taxpayer wants better justification of his tax dollar, school officials now have the opportunity to utilize PPBS, undergirded by an MIS, as a new decision-making tool to communicate more clearly the necessity for such expenditures and the manner in which the tax dollar is being spent.







## USOE PLANNING

John F. Putnam

Specialist, Educational Records and Reports

USOE, National Center for Educational Statistics

I'm not going to be able, of course, to speak for the entire Office of Education, but I can say a little bit about the National Center for Educational Statistics (NCES) which is where we are located in the Office of Education.

I'll say first some general things about activities that are related to the operations of the NCES and then I'll say some things about more specific activities which are related to statistics about elementary and secondary education, about plans for these areas, and cite some illustrations which may be a little closer to your immediate interests.

Overall we are attempting to find better ways to serve the educational community, to assist the various federal agencies, and also to better serve the public, business, industry, news media, etc. We're trying to find better ways to do these things, and on rather a mundane level you might say that we're trying to do what we're doing at the present time but to do it better.

We're attempting to develop some procedures which are related to data collection and preparation to the analysis of information which we have available to us, to the publications program, and to terminology development which leads into some other activities.

First, to obtain some relevant data. We're doing this through the use of advisory committees for one thing, such as CEDS, the Committee for Educational Data Systems of the Council of Chief State School Officers. Another illustration would be the advisory committees that are working with us on the handbook projects. We are coordinating efforts through a federal interagency committee on education, we're deeply involved in that. We've undertaken a specific study of user needs and user requirements to get direction from them, from organizations such as MSEIP and state and local agencies. We're seeking input which will help give us direction.

The second area that we're working in is reduction of effort required by the responders to get information in usable form. And you may be familiar with another undertaking -- to analyze our own requests, our forms and so on. We hope ultimately that we can combine forms and thus reduce the burden on those who complete them and send information to the Office of Education.

We would like to make our information more timely. There are several things that we have done as we try to become more efficient in our own operation; we've reduced what was a considerable backlog in data that we had which was not published. For the future we're considering the feasibility of a sort of Gallup Poll by which we can have a few well placed respondents representing a sample across the country from which we can ask specific questions and come up with quick responses on specific issues. So this is an area in which we're planning for more timeliness in our work.



The quality of statistics will, we hope, be improved as a result of adding people to our staff who have the responsibility for statistical standards. We have established an editorial review board within our National Center that reviews all materials going out to see that they meet standards of quality. The terminology development project also makes a significant input to this area. And finally, we're attempting to develop more efficient operations by making better use of planning, scheduling and things of this sort, so that we can do a better job. The result of this should be improved production, and this will be both in terms of the quantity of things that come out as well as in quality.

In a more specific consideration, I'd like to identify several areas that we are working in and tell you just a little bit about the activities in each of these areas. First in the area of data collection. Just as an illustration, we have the current annual and biennial reports which are on-going and will be continued. Statistics on non-public elementary and secondary schools will be collected this next year if funds are available. Appropriations have not been made yet and we don't know to what extent we are going to be able to carry out these things, but this is what is in the planning stage at the present time. The statistics on non-public elementary and secondary schools would be on a five-year cycle and it is planned to collect this information in fiscal year 1970. Another would be offerings and enrollments for both public and non-public elementary schools, again on a five-year cycle. This was last done in 1960-61. In the new area of data collection, staffing patterns will be investigated next year. The directory of public and non-public elementary and secondary schools will be published this next year. Originally we had planned for this to be done every three years, but it was felt that it would be desirable to collect other information -- program information -- as well. This directory will be the first complete universe of schools in the United States; it will be published in five volumes, according to regions, during the next year. To give you an indication of the scope of data collection, we plan to collect information about educational television in fiscal year '71. In fiscal year '72, with the developmental work going on over the next couple of years, we're planning for information about facilities and equipment. Currently we plan for both of these to be on a five-year basis.

Going into a second area now of data analysis, one of the on-going projects is the publication of projections going into the next 10 years. These identified trends and estimates in educational statistics have relevance for planning purposes. To give an illustration of new directions, we plan during this next year, on the basis of a contract with the Bureau of the Census, to have a map developed which will compare or match census tracts with school districts to provide information about communities, the background of occupations, socio-economic information, and so on. This will be done -- funds permitting -- during the next fiscal year. A one-time study from existing data is the mining of the Coleman data, "Equality of Educational Opportunity," to identify characteristics of what appeared to be overachieving and underachieving schools to see if we can get some indication of why some schools seem to be very successful in their operations and other less than successful, studying the 12th grade particularly.

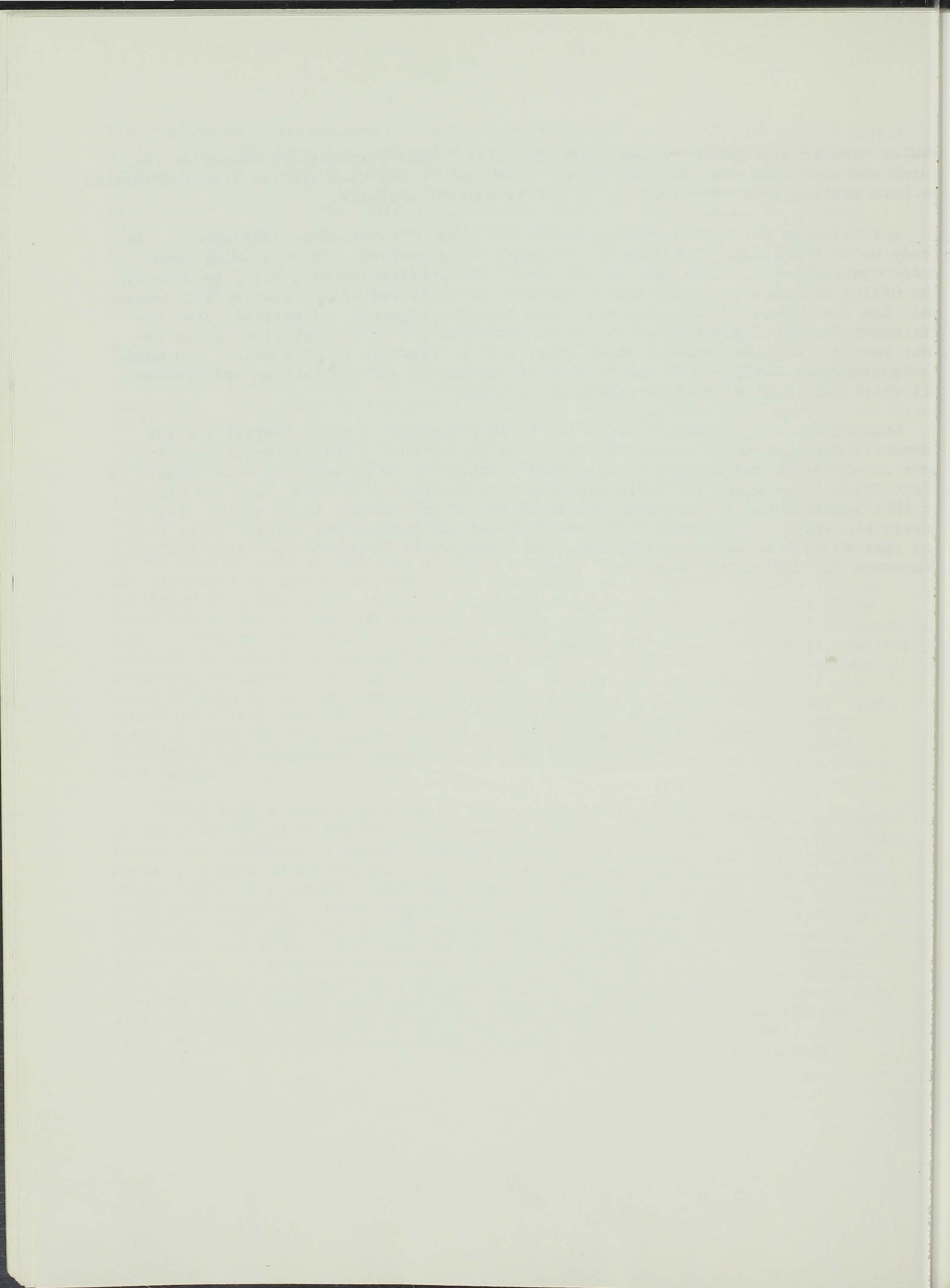


Similar studies will be undertaken with the Title I ESEA compensatory education returns and also from the staffing study. So these are one-time studies from information we have available to try to put it to use by careful analysis.

A final area which I'll mention now is the area of terminology development. Already we've heard about Handbook II (finance) being revised. This is being done under contract -- at least most of the work. The publication will still be done by the Office of Education. The manuscript will be presented by the contracting company and then the Office of Education will make certain judgments and possibly some revisions before it's published. Two other handbooks are up for revision during the next year or two, the handbook about staff and the handbook about pupils. Two handbooks are under development, Handbook VI on curriculum and instruction and Handbook VII which will deal with state education agencies.

So, a lot is in the works, and a lot is in planning. I think overall I might summarize the activities within the Center by saying that I believe we're becoming more sensitive to the needs of educational statistics; we're becoming more capable of identifying these needs and we're becoming more responsive to them. And the result of this should enhance the effectiveness of all of us, whether it be at the federal level, the state or the local. It should affect and improve our ability to do the job that we have to do and, of course, the objective is to provide a better quality education for all of our children.







## HANDBOOK VI

W. Dale Chismore

Specialist, Educational Records and Reports

USOE, National Center for Educational Statistics

I can't help reflecting a little at this time after hearing Ray Page and Paul Johnston, and others, and visiting with some of you. We sometimes do become rather frustrated and depressed in education as we have in developing Handbook VI and terminology to fit the instructional programs in school systems. There have been a good many times when frankly and honestly I've wondered if it's worth it; but then you always get on top of the problem again and go on. But in reflecting I can't help feeling, most of all, proud of the American public school educational system. When we stop to think of all countries on the face of the earth and in reading all the pages of history, no country has done for its people what the American public school system has done for amalgamating races, religions, nationalities, and political philosophies. We have a long way to go and we recognize it, but we think that this Handbook VI, as well as the other handbooks, is a step in the right direction.

It's going to be very difficult to tell in a very few minutes what is in 892 pages. That's what went to the GPO last Friday after six years, two months and twenty days of writing on the Handbook. Actually, we had to have a purpose in starting, we had to have a motivation, and part of the motivation was prodding. A good many people from local education agencies and state education agencies for many, many years had been saying, "What about instructional programs? That's what the schools exist for." And maybe this Handbook should have been the first of the series, or maybe it should have at least been the second, because certainly the schools exist for the pupils and the instruction they receive there for pursuing their occupations of one kind or another. So maybe this should have been the first or second handbook and could have helped considerably. As it is, it's the sixth, and we've had a lot of tremendous help. The purpose behind it all was to identify, classify, and define items of information which are needed by local and state education agencies.

We did go out all over the country for a year, visiting people in state and local education agencies; visiting with people in the colleges and universities and visiting with members of professional organizations who have an interest at stake. One of the things that came of this as seeming remarkably necessary was to have the kind of information that would help in making policy decisions at the various levels; the kind of information that would be needed for operating schools or exchanging information, or reporting to the public, or reporting to other educational agencies, legislative parties and others. As a step toward alleviating this problem, we moved into the Handbook. And maybe in reflecting on it, being emotionally proud of the education system, recognizing some of its deficiencies that we're working hard to overcome, we might say that over the years probably one of the greatest inhibiting factors to moving forward has been the lack of commonly understood and accepted information for expediting communication. We found as we visited with state and local education people, and others, that already there were attempts being made to use this type of information for scheduling pupils in classes, for scheduling teachers with pupils, for improving the administrative and organizational aspects of the educational



organization. We found too that we could tie much of it to state department of education records and reports which we analyzed. We analyzed records and reports for 50 states, for 200 local school systems ranging in size from New York City to Alliance, Nebraska; pulled the information from those to categorize it and then go from there. The spectrum of instructional organizations that we're covering in the Handbook ranges from pre-elementary, through elementary, secondary, junior college, and adult education just short of the baccalaureate degree.

I might tell you a little bit about the organization of the Handbook. Chapter one, of course, gives an overview to the content; chapter two provides ideas for combining information and using information that's contained in the Handbook; chapter three provides classification of items of information about organization and administration, for example; time elements, characteristics of pupils, media, methods of teaching, anticipated instructional outcomes, etc. Chapter four comprises definitions of classified items in chapter three. Chapter five is the classification of subject matter in 22 areas and chapter six comprises the definitions of these classified items. Then we have a glossary, we have an extensive appendix which lists all the 18 ad hoc committees and members of these committees; it lists all the participants of the nine regional conferences we held at which the third draft of the Handbook was critically analyzed. We took back with us in the minutes of these conferences recommendations for refinement and changes in content. We also have the list of the Office of Education people both in Washington and in the regional offices who participated as well as the names of many others. We had represented on these conferences and committees people from pre-elementary, elementary, secondary, junior college and adult education levels as well as the college and university level. You might be interested in knowing that we had on these committees dealing with subject matter not only people who were educators, who were a part of the process of education, but also people who couldn't have been less interested in teaching. They were simply authorities in fields that are not necessarily education, for instance AFL-CIO was represented. We had scholars who were concerned with the substantive content of America, not the teaching content, and we had administrators on these committees. So we had a broad spectrum.

The final product will be one volume with a silk binding; it will be typeset and have a very extensive index. Now, in closing my remarks I'd like to tell you we had a total, as I counted, of 573 people working intensively with us during these six years, two months and twenty days. There were 76 professional organizations and federal agencies represented. We think we did pretty well in following out the President's executive orders exhorting the various federal agencies with common interests and problems to get together and work them out in discussion with mutual give and take. The US Department of Agriculture worked long and hard with us as did the Department of Defense; the Bureau of Revenue, Department of Labor, Bureau of Employment Security, the Public Health Service, and the Bureau of the Census are among the federal agencies that have a stake in this. A number of publishers have been interested in the Handbook. The Macmillan Company, McGraw Hill, and two other publishing companies that are publishing a series of guidance manuals told us they were using our Handbook for their guidance.



And in closing, I'd like to tell you something that this handbook has made possible that has not been possible before and this is why, I think, so many federal agencies have been interested. For years we've had plenty of information about labor supply and demand from the Bureau of Labor Statistics; since 1939, with the dictionary of occupational job titles we've had job information, classification of classes of occupations and descriptions of these occupations. Now, for a change, we have the other part of the triangle which provides the subject matter to spell out the educational requirements of these classified occupations. As an aside to our handbook, on June 9 they sent to press a handbook titled, "Vocational Education and Occupations," which they took much of the handbook we had worked on and put it in one column and put the dictionary of occupation titles that match this educational phase in the other column.

It's been a pleasure to be here and I wish we could take more time. Thank you.







## INDIANA'S FACILITIES COLLECTION

Richard Morrison  
Director, Schoolhouse Planning  
Indiana Department of Public Instruction

I believe that it is only proper that I attempt to explain some of the background of why Indiana and I have become involved in an effort to implement a certain portion of the Facilities Subsystem that is the outgrowth of the MSEIP.

I have participated in the Facilities Subsystem for over two years. The exchange of ideas and professional knowledge that I have gained from such persons as Dr. Englehart, Dr. Reida, and Dr. Tollerud and others is immeasurable.

Just a year ago a series of staff meetings was held in Indiana chaired by State Superintendent Wells for the purpose of getting organized for the forthcoming general assembly which convened in early January. The cost of school construction loomed as a major item that the legislators would undertake during their 61-day session. Since I didn't have the answers then for Superintendent Wells, it was quickly and correctly surmised that if I couldn't provide answers for him, I wouldn't be able to provide answers for the legislators; but maybe they wouldn't ask.

We didn't really believe that they wouldn't ask. Also we were involved in another meeting of MSEIP participants, each of whom was going to be asked if he felt that his particular subsystem should be implemented in Indiana. I was the first asked and they never got around to asking the others to explain their needs. Now I could tell the Governor, legislators, and others that we had started.

To start it was necessary to examine what our position was and then make plans to move ahead. If it is possible to visualize this on a 0 - 10 scale, we had a hard time making zero. At that time there was no state record of the cost of new facilities. A complete and comprehensive record was and is being maintained on each project through final plans, but no record was kept of what these facilities cost or what was contained within these new schools.

I had some ideas, MSEIP offered some help, and I got the Office of the State Superintendent committed to allow this attempt for providing a document to collect some of this information just about a year ago.

It has been slow, and we are understaffed, just as I'm sure many of you are. After placing some ideas on paper, setting out a plan of action and getting the glorious holidays past us the 91st General Assembly convened and this started my 61 days of embarrassment in attempting to answer their questions about school facilities and their costs. Fortunately, some of the questioners were not too knowledgeable in the area of facilities so I was sometimes able to bluff my way through with a smattering of technical terms.

This experience was good, however, in that it reinforced for all of us in Indiana the important need for this type of information.



Following the assembly we contacted a group of educators and architects from throughout Indiana for the purpose of determining if the desired information was what we would be making an attempt to collect. Most of the responses to a rough document, and I do mean a rough document, were worthwhile.

This was the first time that we encountered the fear of how we were going to handle the data once it had been collected. Questions were raised on what was going to be done with the information; how would the feed-back take place; who would control the data; how much comparing of two or more structures would be done and if this were done, how would we insure like buildings?

Realizing that public feeling gets very much involved in school facilities, anyway we all realize that public feeling reaches a high pitch on school sites, we know it will be necessary to handle the data in a highly professional manner. Comparing the cost of similar or dissimilar structures has been delayed at this point until a more complete property accounting system is incorporated in all of the 300 plus school districts.

It was felt that the individual identity of a structure would be lost in the computing of the totals. After satisfying ourselves that we had properly answered or thought of most possibilities as to the use of the data, the document was redone in a type-written form.

A conference was called in late April in Indianapolis for the purpose of going through the document, both the questions and the directions, item by item. The conferees were representative superintendents, in size of corporation and geographical location. The state universities were represented and architects were present. Dr. Marion Ruebel of MSEIP came to Indiana for the day-long conference. Again it was necessary to defend the position of the state in collecting this information. We underwent nearly three hours of questioning; I felt somewhat like a defendant being cross-examined in a trial.

The document we have now is the outgrowth of this need, the cooperation of the Office of the State Superintendent, MSEIP, the educators of Indiana, and some real fine assistants in my office that help but couldn't make this particular trip.

The document is uniquely arranged. Part I, page 3 is an attempt to identify the type structure that has been constructed. Page 2, on the left-hand page are the instructions for completing the right-hand page. All 14 items are defined on the left. Many of the definitions were taken from the original MSEIP Documentation and then adapted to the Indiana situation.

Part II, page 5. Cost. Again the instructions are on the left-hand page. I might mention that to get all of the instructions worded and spaced on the left-hand page required several drafts.

Here we have broken the cost down in a manner which we feel will be meaningful. Toward the bottom we have included the method used to finance the facility. This is strictly Indiana, because I am sure that we are different from other states on this specific item.



Part III, page 7 is the analysis of the facility. The instructions were in many cases the outgrowth of the many subsystem meetings and we hope that this can prove to be the first step in total property accounting for the Indiana school districts.

The rough draft of the document was sent to 30 superintendents for completions; 12 of these were visited personally. They were selected on the basis of cooperation and to make sure we had all types of facilities and sizes of districts.

The response was heart-warming. Few problems were encountered. The biggest complaint was the length, but all busy men complain about the length. However, some superintendents were able to complete the document in a matter of 5 - 10 minutes. It really depended on the information at the local level. Those who took much longer were quick to add that this type of information was badly needed both statewide and locally.

Upon return of these 30 documents some minor changes were made, the final form was adopted. It has been sent to all superintendents that have constructed new facilities since 1966.

We have not yet received enough of these documents to start compiling the data; however, our Division of Educational Information has started the preliminary work for instruments to do what is necessary with the data collected.

I sincerely wish to thank MSEIP and the others involved for helping the Office of the State Superintendent and Indiana to move closer to that ultimate role of leadership that we all hope to achieve. It has been a rewarding experience for me so far and I know that we aren't nearly finished.

The opportunity to discuss this with such outstanding educators as yourselves has been a wonderful experience for me. Thank you.







## FINANCE STUDY IN OHIO (part one)

Jerry W. Hammett  
Director, Information Systems  
Ohio Department of Education

Mr. Chairman, ladies and gentlemen: It's certainly a pleasure to be here this afternoon. I feel that I have been one of the fortunate people in that I've been able to be involved in the MSEIP from the start. I realize that what is the start in my mind and what is the start in Superintendent Johnston's and Dr. Van Dusseldorp's minds are probably something different. My first exposure to the Project was at the first Policy Committee meeting. I recall that I felt the Project was a bold, ambitious, and necessary undertaking. We must remember that conceptualizing, designing and implementing information systems is a long, hard process. I know that many are impatient to have the product. Your task and mine is to set forth the information system which will produce timely and accurate output.

It has not been the goal of the Ohio Department of Education to simply set forth a multitude of forms for the local school administrators to guess their best guesses. It has been our goal to actively influence information systems developing in the LEA. We do this through a group known as the Computer Users' Group. Development at both the SEA and the LEA is a coordinated effort. For some time now we've realized that the financial information collected at the state level is grossly inadequate; for example, it is impossible to isolate program costs. I think we had three choices: 1) to do nothing, 2) to change the reporting requirements, or 3) to redesign at the LEA level and then change the state reporting requirements. We chose the last. We recognize that the state agency must have accurate information and also that there exists perhaps an even greater need for management information at the local level.

We have had outside support in doing this study aside from the MSEIP Documentation and funding. In February 1967, the Governor of the State of Ohio, James A. Rhodes, reconvened the Council for Reorganization of Ohio Government for the purpose of making studies of this administration in the public schools. The Council conducted the study and made its report in November 1967. The Council recognized that methods for accumulating and reporting common data vary among school districts. It further recognized that information gathering of school district accounting must be simple enough for all first graders to follow, but should not restrict practical, efficient operations in large districts.

Among the recommendations relative to accounting practices was the recommendation that a new chart of accounts should be compiled as a joint effort of the Department of Education, the Auditor of the State and school districts. It is recommended that the chart of accounts permit expansion to accommodate larger districts, the establishment of data processing methods, and functional groupings of accounts as needed for reporting and control of the standardization of records and reports for more accurate statistical comparisons.



As formerly specified, the system was to incorporate techniques that enabled school districts to better manage their financial affairs; techniques that enabled school administrations to provide meaningful information to their school boards and the public; techniques that enabled school districts to isolate relative costs; methods for initiating a meaningful exchange of information between districts and finally, a method for supplying more relevant information for the Ohio Department of Education in order that it might provide better liaison to the Ohio Legislature, do meaningful research on behalf of the district, and participate in information exchange with other states.

To coordinate the developmental activities, a review committee was established made up of superintendents, assistant superintendents and clerk-treasurers. The methodology designed to complete this study concentrated on achieving and maintaining consensus of an independent, objective systems design. Importance of consensus cannot be underestimated because the success of the project was dependent on a broad understanding of problems from all districts and also a wide acceptance of the system proposed. In addition to the need to achieve consensus among districts, was the need to coordinate the Ohio Department of Education, the Ohio Department of Finance and the Ohio Auditor of State.

Specifically, the study incorporates the following elements: 1) on-site studies of eight districts of varying size but including the six largest districts in the state; 2) periodic meetings with representatives of these districts to review progress and strive for consensus; 3) submission of a written questionnaire to 100 school districts of which 78 were returned and analyzed; 4) a series of meetings covering several days with a committee of assistant superintendents to develop specific recommendations for revisions of statewide chart of accounts and to discuss accounting principles; 5) a series of meetings with the Ohio Department of Education, the Ohio Department of Finance and the State Auditor's Office to review progress and discuss specific interests of each of these departments; 6) continuing coordination with the Auditor's Office and the Ohio Department of Education; 7) review and analysis of existing studies in this area and coordination with the US Office of Education on future guidelines information requirements.

It became increasingly apparent as the study progressed that there was both enthusiastic support for the project and the approach in almost all quarters, but also a healthy respect for the complexities of implementing an entire new system over more than 600 school districts.

I have with me Ron Vidmar, the president of Systems Implementation, the firm that did the study. He will describe the study for us (part two, Finance Study in Ohio, following).



## FINANCE STUDY IN OHIO (part two)

Ronald E. Vidmar

President, Systems Implementation

The objective of the Ohio Department of Education is to develop a system for the local school district that will provide information at the state education level as a by-product. We made an initial study in a variety of school districts. Some things became immediately obvious and none of them will come as a surprise to anyone here. There is a scarcity of relevant information in the financial area that has to do with the fact that the public is becoming more conscious of costs and as a result wants information. Information is lacking to make decisions on the increasing number of sociological problems in the urban areas; it's lacking in regard to the large number of programs, many of them supported by the Federal Government. The State Legislature and the Department of Education were frequently making decisions in a vacuum for lack of information. Schools did not have the tool by which they could implement new management techniques such as PPBES and large districts were running obsolete systems to solve problems that were now obsolete.

None of the largest districts of the State was using the chart of accounts prescribed by the Auditor of State because of the inability of that chart to serve the needs of the management of the district itself. So we undertook a fairly complex problem, and that was to design a system that could be used by all of the more than 600 school districts that ranged in size from under 2,000 pupils to more than 200,000 pupils. We wanted it to be a system that would be sophisticated, truly a financial information system -- a financial decision system might be a better way to say that.

It was necessary that the system tie in coding techniques to enable the State of Ohio to compare activities in school districts with other political subdivisions in order to answer the federal requirements; it was necessary that it could be effectively mechanized both because of the large number of districts that were already using a computer system and because Ohio is embarking on a system of regional computer system centers for school districts; and it was necessary that it enhance the effectiveness of the school district itself and provide information as a by-product. We believed that the same system could be used to manage the district effectively and to supply information that the taxpayers wanted and that could be a basis for legislative decisions.

As we looked at the problem, it was obvious that the basic need for information in almost all of these cases -- whether we're talking about legislators, or department of education people, or school board people, or taxpayers -- had to do essentially with the allocation of scarce resources. There seems to be right now unlimited appetite for both quality and quantity of programs, but there are always clearly limited resources or at least there is insufficient justification in terms of cost and effectiveness to get the resources. So the question normally being asked is, "Should we conduct a program relative to how much it will cost?" Now it became obvious that cost was only one of the resources



involved and in this development of information system, we know staff and space are the others. How much money, how much staff and how much space is necessary to conduct a program? Now turn to the program in the area of education and what are we generally asking? We're not asking the cost of the erasers which is typical of the line-object accounting form we normally have given to us for that, but rather we are asking how much does it cost, for instance, to provide instruction in vocational automotive shop with 900 students in a given area. We're talking about what the cost of instructional programs might be.

So as we looked at the dimensions of a financial information system we went directly to the chart of accounts because, as you know, in finance this represents the taxonomy or the data that we have available to us. The chart of accounts in finance will provide for us the dimensions on which we will later be able to use that data. It was easy to see the inadequacies of the existing chart of accounts because of their preoccupation with objects of expense, that is to say, what was purchased, not what it was purchased for or what was being done. So we settled on a design for a chart of accounts which I'll describe very briefly.

In the coding structure we're talking about coding for expenditure accounts from which we can get cost information. Fund, of course, is the typical definition of fund in fund appropriation accounting; by level we mean the level of instruction, secondary, middle school, elementary, adult, etc. Function might be called by many names; we're referring here to function of a continuing program, although many people don't like that term, along the program and activity line. Type of record describes what we're talking about, the double entry type of system with receipt, asset, liability, etc. The major object is the object of expense, what was purchased.

These we say are mandatory coding requirements. That is, we're hoping all districts will adopt them and they will become the basis for information exchange throughout the state. They don't necessarily provide all the information that an individual school may need in the management of its own affairs. So we recommend optional minor objects, a further classification of the object coding. Location refers to specific schools in a system for those districts that manage that way, and by programs we mean a special program which is to be monitored and this could be a secondary classification to what we earlier described as function or it could describe a program that is inconsistent with functional lines. So those are essentially the dimensions on which we propose to develop a chart of accounts.

Now again, we're not thinking in terms of a chart of accounts that is static, except in the smallest districts where they are using manual methods in which case a static chart of accounts might be developed as a sub-set of this multi-dimensional chart, if you will allow me to use that term, for the larger districts that are using a computer system. So the chart of accounts coding says essentially, what is the object? How was it used? For what program was it used? At what educational level was it used? At what location was it used? And for what special program? We feel that this is going to make it possible for us to analyze cost in a way that has not been done in Ohio before. This basis will be collecting costs, direct costs, of instructional programs. One thing I should have said about the chart of accounts is that in the functional area under instruction



we've included all the basic curriculum programs, that is to say, there would be secondary English, secondary mathematics, secondary science, etc., so that we will be collecting instructional costs by program. We will also be collecting cost under some of the classical functional titles, such as administration, pupil personnel services, operation of plant, maintenance of plant, etc.

Our objective will be to allocate all costs to instruction which is in fact our primary interest to establish -- what is really the real and total cost of instructional programs? We hope that we can accomplish that by using information that will eventually become available from the information system in staffing, enrollment, and space utilization. That is to say, we will be able to allocate what are essentially overhead costs back to actual instructional programs based on the number of students that attend those courses or from the amount of space that the instruction required or the amount of staff that was applied to the instruction. So this represents a possibility of an advance technique in cost studies that can result from the installation of this system.

In the design of the system we were primarily interested in interfaces, defining interfaces between what we describe as a financial information system and other information elements. The first area in which we looked at interfaces had to do with those other financial applications that existed in every school district. We know, for instance that every school district has an accounting department and a payroll department, has a personnel department and does budgeting, etc. So it was our objective to describe to local school districts what the interfaces between our system and their subsystems would be. Generally speaking, the interface represents input from those various application areas to the financial information system, and reports back from the financial information system to the various application areas. These we describe as the internal interfaces. In addition to that we knew that we have to interface other information elements that eventually would become a part of a total information system, and as you well know those other elements are enrollment, space and personnel information that so many of you here are working on and we hope eventually will be implemented in Ohio.

We finally had a series of external interfaces, that is to say, information that needed to be provided from the district to external organizations such as the State Department, the public, other districts in information exchange, the Federal Government, etc. So the designing of our information system was in large part determining the chart of accounts and description of these interfaces.

The system as designed now is essentially a computer based system. What it will accomplish, what it amounts to on acceptance of a chart of accounts, would be a series of computer programs that would generate a chart of accounts that would then enable the master file to be enriched by budgets and appropriations based on the way that a given local school district wanted to budget or appropriate; it would encumber purchase orders, and it would also accept other input.

The output of the system would be all the basic accounting reports necessary for accountability and auditing the books of the regional center, etc. In addition to that would be financial reports that the local district deemed necessary for management based on dimensions described in the chart of accounts. And here we obviously



have an almost unlimited variety of the kinds of reports that the local school district would be able to develop. The basic reports in terms of the interests the State Department of Education initially has would probably be major object within function, or major object within continuing programs, if I may use that term. Additionally then, they eventually would be interested in reports which would involve costs in instructional programs. We also hope in Ohio that these programs can be written centrally and made available to school districts and also to regional centers in order to avoid duplicating the cost and effort of the computer program system since we are talking about a standard financial system.

Generally, the acceptance we've had of this approach in school districts has been very high. I think that implementation will be very complex and will probably require a period of three to five years. A large part of this problem of implementation in some 600 school districts will have to do with them getting ready and then readying their own subsystems to interface a system of this complexity. But there is no question in my mind that this is an implementable system and if Ohio proceeds with it, there eventually will be ready answers on which to make decisions regarding what Ohio receives for its one billion dollar expenditure for education.



## MINNESOTA'S INSTRUCTIONAL PROGRAMS (part one)

Harlan H. Sheely  
Director, Information Systems  
Minnesota Department of Education

Rather than spend a great deal of time talking about Minnesota's effort in the instructional programs subsystem, I would like to discuss how Minnesota has approached the problem of attempting to automate the State Department of Education.

Minnesota started in 1966 taking a look at itself as an institution in terms of its role as a state agency and its purpose in working with local education agencies. We were pretty sure that we had a problem, but we were really quite uncertain as to what specifically was the nature of the problem. And at this time MSEIP had just evolved and at about that time Title V came along for the purpose of helping state education agencies improve their structures. It was decided that we would pour considerable resources into investigation of the Department to find specifically what our problem was. As a result, a contract was awarded to the ARIES Corporation to assist the Department in defining this problem. They did this through an analysis of what the Department was currently doing and from this analysis solved the problem, using the computer as a tool, in terms of a system design which looks very similar to the MSEIP Documentation. But the concept of how to realize it is a bit different. This took approximately 40 man-months of effort, just to define the problem and come up with a tentative solution. Unfortunately, at the time we were going through this cycle, the MSEIP Documentation had not been completed, but it is amazing how similar the two resulted.

Primarily, the problem was defined as one of communication. We were using horse and buggy methods of communication and data assemblage in a very streamlined jet age. We just couldn't keep up and provide adequate information. What we're talking about in Minnesota then is an information transmittal system -- a system which transmits information. Two people in the Department of Education, whose desks were no more than 20 feet apart, were collecting primarily the same data on different forms. There's no need for this. To describe the concept of our system and how we're trying to achieve it, we talk about the concept of information. The only reason you have information is for evaluation, so we're talking about the concept of information and evaluation; we're talking about plans for the state education agency in its totality. We're talking about various summary reports that the Commissioner, State Board, and Legislature need to plan the destiny of the Minnesota Department of Education. We're talking about mid-management people who have this plan before them and of critical check points through the plan to identify what controls need to be placed and where and when in order to achieve this plan. And of course we're talking about those who are at the operational level that need substantial day-to-day data in order to make various rules and decisions pertaining to their program activities.

We started by trying to find out how people of the Department made their decisions. How do you base this decision, what kind of data do you use? And we found that this was fruitless; we found that people were operating six months behind being



current, and they really couldn't project something for us that we would develop five years ahead. But we did find then, through trial and error, that by taking a look at the forms, analyzing what data they collected and how they put their operational data together in reports, that we could have a starting point. And from this operational data then, we could design summaries and reports which would be appropriate for these activities. Substantially, we've completed a number of subsystems; others we haven't started. But this is a dynamic process and once we complete this cycle and provide the data, the summaries and reports, to various individuals in the Department to see what happens, we'll come back and start to make application of some of these reports.

In terms of using the computer as a tool, the subsystem elements are of course those five that are very common throughout the United States. But in Minnesota we've added three more because the Division of Vocational Rehabilitation, School Lunch, and Transportation are located in the Department of Education and the nature of that data is not necessarily a part of the broad data base pertaining to elementary and secondary education. And of course we have the school universe file which we refer to as our county, district and school file. We're now about six months into the further design phase of our pupil information system. We've taken the initial ARIES study along with the MSEIP instructional programs file and tried to merge them in terms of how Minnesota has defined its problems and what Minnesota has available in terms of resources to resolve these problems in terms of an informational transmittal system. Facilities is the last subsystem, and in finance we have a state auditor. His is a constitutional office and he's indicated that no state agency or state department will involve itself in any kind of activity until he's ready, so we have not started any activity there at all. Instructional programs, of course, is one that I'll describe and incidentally, you'll see how much we estimate it will take before it is operational. The personnel subsystem is in its final stages. We're producing some reports although, unfortunately, we keep falling backward in this. In the field of data processing in Minnesota there's this thing we call negative progress -- that is when we've made no forward thrust but just find out what it is we're doing wrong. The Vocational Rehabilitation information system is operational; the financial portion of the Rehabilitation system is in its final pilot stage. That portion will be operational July 1. The statistics portion of the subsystem has been in operation for a year. School Lunch has been in operation for a year. We're now in the phase of going back through and correcting some of the mistakes we've made. In Transportation, we haven't started yet.

We undertook two different levels of implementation. One which you can call the theoretical approach and one which we call the physical approach. The theoretical approach involved the definition of various committees to build identity into the Department. This is not a one-man job; if you have 650 people in your Department, it's a 650-man job. You must get everyone involved with you because the experience that others have you must use and benefit from. We felt this also in Minnesota with the personnel of the 13 state project and ensured in fact that we did have the experience of these people. In addition to those we have a large data processing committee in the Department, we have the Cabinet, we have this Project, we have representatives or coordinators within



each division, and we have an association of all educational institutions in the State called the Minnesota Council on Education Information Systems that we attempt to coordinate our system with. By the same token and in parallel we define the technical information implementation in terms of our priorities and nature of resources.

So basically we developed this and submitted it to the various groups of the Department for approval, and the Cabinet, and finally the Commissioner said, "I think you've got the plan and priorities right, go ahead now and allocate your resources." We also planned in terms of man-months of effort. We planned 259 man-months, it's now 350 and before we're done it will be considerably more than that. We interpolated the manpower costs and the manpower dollars to a total of \$228,000 and that's perhaps one-third short of what the actual costs are going to be. We also attempted to identify in terms of computer time what the costs would be and came up with computer time of \$268,000 and, as many of you know, Minnesota uses a state agency, a central service, and they bill us at the rate of \$60 an hour. Total expenditures that we estimated in 1967 were \$496,796 and since 1967 there has been a 20 per cent increase in costs so if you project that by 20 per cent you have a better understanding of the magnitude of the venture.







## MINNESOTA'S INSTRUCTIONAL PROGRAMS (part two)

Milan Elton

Systems Specialist, Technalysis Corporation

I would like to give you a summary regarding the work that has been done so far in the instructional programs system in the State of Minnesota. Approximately six months ago Technalysis was awarded a contract to develop the program specifications necessary to implement this system. We visualize the effort as being comprised of four basic stages; the first stage was the systems analysis effort. This involved determining the general requirements of the system by first analyzing the present procedures in the Department of Education; secondly, holding concentrated fact finding sessions with individuals throughout the Department; and finally, determining the needs for the future. Once the systems analysis was completed a requirements document was prepared and submitted to the instructional programs data committee for its approval.

This requirements document basically covers three areas: first, the output requirements of the system and various descriptions of a number of reports and examples of what these reports might be. Secondly, the input procedures. These procedures are very preliminary at this stage but the document gives a list of various data elements that might be collected and a description of each. A third part of this document is a description of the various phases that would be involved with the collection of the instructional programs information. The first phase is the collection phase, the second phase is the input-update which initially process the data, updates it on the master files, etc., and finally the third phase which is the report phase.

Upon gaining approval of the requirements document from the instructional programs data committee, we proceeded with the system design of the instructional programs system in developing a system chart which showed the relationship of the data within the instructional programs and also as it relates to the other systems in the Department of Education.

We then proceeded to develop the various coding structures required by the various data elements and verified existing structures such as the various subject activity codes that were presently being used and in turn developed the new structures required. We also developed the various file layouts that would be required for the various data files. This included various input files, intermediate files, and finally the output files and the output reports.

We combined this information from the system design effort into another document called a system design document and again submitted it to the instructional programs data committee for its approval. Following approval of this phase we then proceeded to the final phase which was the actual development of the detailed specifications. This document was basically divided into four sections, the first section being the system description and the system diagram which described in general terms the entire



system. The second part of the document being the description of the collection phase in detail as far as the various elements being collected and the various concepts that it was being collected on. The third part being the input-update phase and finally the report phase which detailed the various reports to be produced.

Now I would like to describe the systems diagram of the entire system, the entire flow of information for the instructional programs system as well as the relationship of the data to other files and other systems. We have developed the "turn-around document" concept whereby we can pre-print the information that is held in the Department of Education files and then send out these forms to the individual school districts. They can then complete the information for those fields that are blank on the forms and also make changes to the other fields that might be in error.

The first program that will be executed will be the initial turn-around document program. This program will obtain the various data elements required for the document from the sorted personnel file, the county-district-school (CDS) files, and the college-assignment-certification (CAT) files. The sorted personnel file will contain individual records for all personnel that are presently being assigned throughout the State of Minnesota. This program will process this file and extract all unique courses within each school within each district and printout a turn-around document for each of these unique courses. Now for this first year only basic identifying information will be preprinted, such as the subject-activity code, the name of the particular subject area, the course level (which would differentiate between the various courses being offered in a multiyear sequence, such as languages, etc.), the county number, district number, school number and name, the section I.D., (which would be coded as 01 since there will be only one document for each course for the first year), section status, (which will be "new"), and the grade level (which will be whatever grade level pertains to that particular subject area).

Before we go on any further I would like to describe what is meant by the section I.D. We are proposing that one document be collected for each section within a course or each group of sections. In other words, in some cases where one teacher is teaching several courses of math, for example, all sections might be identical, therefore we are providing the ability to supply the information on one form for all of these sections. However, in some cases each section is different and one form will be required for each of these unique sections within that particular course. Therefore section I.D. could be the section I.D. number that is used at the local school level or in a combination of sections it would have to be simply a unique sequential number from 01 through 99 that would basically identify the number of sections.

Once all the documents have been prepared for the school districts, the forms will be sent to the individual schools where they will be filled out and sent back for the coming school year. The responsibility for completing these forms at the school level will be designated by the superintendent, in some cases it could be himself, in other cases the principal, or any individual that



would be familiar with the curriculum of that school. Once these documents are completed at the district level they will then be channeled back through the State Department. The document itself will be a multi-part document whereby the school districts may keep one form for themselves and send back the other copies to the State Department.

Once the documents get back to the State Department, they will then be key punched and submitted as input transactions to a program we call the input-sort program which simply combines the various cards that are input and places them as one record per document on the sorter transaction files. In order to get all the information on a particular card into the system it has to be set up on a two-card basis whereby the first card contains the basic identifying information and the second card describes the particular sections in that course in more detail. An additional input to the edit-update program besides these sorter transactions may also be magnetic tape. In some of the larger school districts, in the case of Minnesota there are some regional centers, they might supply the information directly to magnetic tape and this would then become input to the edit-update program. Another input to this program, of course, would be the master curriculum file. The first year there would be no file, it would be created from scratch, but for subsequent years the curriculum file would be input and would then be updated via this program. For any errors that might occur through key punch etc., an error listing would be printed which would be used to correct the various errors and then would again be run back through the input so then finally we would have an update program.

The main output of the update program would then be the updated curriculum file. This file would then be used to prepare a number of program reports for various consultants in the Department of Education; for various school districts, certain reports will be useful to them; and for other educators in the State of Minnesota. We have proposed two basic programs that will create this report information. For the management report we have proposed a report generator program. This report will have the ability for inputting the various requirements for the reports that are needed and it will then be the actual format of the reports. It will extract information from the proper files and then create the various reports as requested. In other words, it is a very generalized program; it will have the ability to create a number of different kinds of reports in whatever fashion they are described from the input cards. In addition to the curriculum file, the personnel file, the CDS file, the CAT file, and eventually the facilities and the finance files will also be inputs to this report generator program. So a number of reports will be produced. Some are defined at this time, others will be defined later; but the program will provide the ability for different kinds of reports.

There will also be a specialized report program that will provide the information and will print the turn-around document for the following years. Now the turn-around documents for the years after the first year will be slightly different in that they will extract the information simply from the curriculum file and not from the sorted personnel file as was the case in the first year. It will provide all the information on the form in an abbreviated format. In other words, the various elements will be abbreviated alphabetic descriptions so that the individuals reviewing the forms,



completing the forms, or changing the forms, will be able to understand the document in a more feasible manner and will not just have to look at a great deal of numbers.

Another report that will be produced by the specialized program will be the curriculum description report that will be used by the various consultants in the Department. Now this report is basically the same as the turn-around curriculum document in that the same information is supplied; one sheet is pre-printed for each particular section within the course and the sections are unique. The main criteria that is different from the turn-around document is that these reports will be prepared by subject areas. In other words a math consultant, for example, might desire descriptions of all the math courses in the State of Minnesota. He may then request this information via the subject selection card which will describe the particular math course in which he's interested and the reports or documents that will be printed will pertain to those areas only.

Now moving on to the collection phase of the program specifications document I would like to go through with you the various data elements that are to be collected on the form. I mentioned previously the various elements that are to be collected on the top line of the document. In addition to these elements we also have a control number. This number will not be filled in at the local school level but it will simply be stamped on each form as it comes into the State Department. It will be used for batching and control purposes to help find the source documents that are in error, and will be strictly a sequential number that can be as high as six digits. We have also provided for the date and page number on the form. The page number will be "page one" of so many pages. The total number of pages will be simply the total number of documents that are submitted from a particular school within the district.

Up in the right-hand corner we have what we call the local I.D. number. This number may be any type of number or an alphabetic description or a combination of alphabets and numeric characters that can be used by the local district to describe this particular section in its own words. They might have a particular section I.D. course number combination that they use to identify a certain course of their own district. They could then provide this number or a combination of numbers in this field and this field would then be printed out for the subsequent years as the basic identifying information for this particular course. Now in addition to coding the word "new" in the section status column, a particular course simply being updated for a particular year would have this field left blank and also if this particular section is to be deleted from the system the letters "del" should be supplied in this area so that the section may be deleted from the system for the following year.

Now moving on to the next line, in the first field we have the year or grade level. Now this entire document in program specifications is basically developed for secondary and area vocational schools. So the year or grade level that we are concerned with at this time is primarily grades 7, 8, 9, 10, 11, 12,



plus the post high school, adult education and area vocational school. We feel that most of this document could be used for elementary; however, there are a number of changes that are significant and with slight revision of this manual it could then be applied to the elementary school.

Now moving on to the next field we have the number of sections. This is simply the total number of sections that are being reported on this particular form. And then we have the number of pupils male, and the number of pupils female; and we have the type of pupils. This field best describes the characteristics of the pupils for whom the section or sections are being planned and taught. Now there are a maximum of four possibilities in this particular field. Within each section or group of sections there might be a number of different types of pupils. Examples might be the regular or normal pupils, adults, potential dropouts, former dropouts, post high school, gifted, special learning disability, EMR's, TMR's, physically handicapped, emotionally handicapped, partially disadvantaged, etc.

Moving on to the next field we have level of difficulty. This field is a one-digit code that best describes a type of learning program in a section or a number of sections. Examples would be remedial instruction, basic, below average, average, or regular, advanced, accelerated, college or honors, enrichment, or in some cases maybe all abilities or the full range are within this particular group of sections and in that case there would be a special code adapted for that also.

The next field on the form describes the grouping criteria that may be utilized in the particular course being offered. There is a maximum of four possibilities for this field which would include no grouping, grouping by abilities, by interest, by I.Q., by sex, teacher recommendations, standardized test, physical development, behavioral characteristics, etc.

Moving on to the next field we have the requirements that are satisfied by the successful completion of this course. Now in some cases there are no requirements, in other cases it's according to district requirements, in some cases its both state and district requirements, some cases just the electives, or there might be others in some particular situation.

The next field holds a three-digit code that describes the number of course credits given for the successful completion of the course offered for this group of sections. Now this number should be expressed in whole or in decimal fractions to the nearest hundredths. In other words one and one-half units would be recorded as 1.50. The period of the school year designates the period of time within the school year during which this section is being offered. This could include just for the summer, just the regular school term, both the regular and summer, before or after regular school hours, evening classes, etc. A type of schedule describes the type of scheduling process under which these particular sections are being offered. This could be standard or traditional schedule, traditional-flexible, modular-flexible, two weeks variable, weekly variable, daily variable, block and flexible, etc.



Going on we have the minutes for section or module. This would be the average number of minutes a section meets each session in a standard or traditional environment, or each module for non-standard schedule environment. Then the number of sessions or modules per week. This is the average number of sessions per week or module. In the number of weeks per term, term may be defined as six weeks, nine weeks, a quarter, or a semester, etc. The number of terms per year is self-explanatory.

Moving on to the next line we have content descriptors. How can content descriptors be developed to further describe a course? We have attempted to develop a number of these codes partly from the Office of Education, partly from the work of MSEIP prior to the work on this particular system and also from information supplied to us from individuals within the State Department of Education. So a maximum of four codes will be allowed to further describe the particular contents of this course. Now any codes within the given instructional area that we are talking about may be used. In other words it is not necessary that only sub-sets of a given code structure be utilized. For example, if the subject activity code being indicated was 030103, which is advanced accounting in the business area, any of the codes listed from 100 through 999 could be used as a content descriptor. We have prepared a separate document entitled, "Subject Activity Codes and Content Descriptors," which could then be used as a reference manual to determine what these various codes and their meanings are. The reference page number that we indicated in this document refers to the various descriptions that may be found in the Office of Education handbook.

Moving on to the next field we have the various teaching medias that are used within this particular group of sections. We have developed groups or categories of teaching medias. Some of these are visual materials, visual equipment, audio equipment, audio-visual equipment, closed circuit t.v., educational t.v., computer assisted instruction, computers, equipment for specific courses, driver education range, driver education simulator equipment, etc.

The next field is the text usage field. This simply indicates the use or lack of use of textbooks for class purposes and its indicated by a one-digit code; 0 being no text used; 1 being one text as the primary basis for the class; 2, more than one text as the primary basis for the class; 3, paperbacks and periodicals are used; 4, one text plus lab manuals; 5, local guides, etc.

Field number 29 is the methods of evaluation that are used. These methods describe what teachers use to evaluate various instructional methods that are being used in the class. Now this may be done by observation, by interview, standardized test, teacher-made objective test, survey instruments, etc.

Moving on to the next field we have structure of the section. Now this might be self-contained, departmentalized, individualized, team teaching, multi-grade, non-grade, cooperative teaching, small group, large group, open lab, etc.



And then we have the per cent of time in lab, per cent of time in small instructional groups, per cent of time in large instructional groups, etc. Then we have the source of funds. This field was very difficult to define and it will probably be very difficult to complete as well since it is very difficult to determine exactly what monies are used for a particular section or group of sections. However, in some areas it is very advantageous to know where these monies are coming from. So we have listed a number of categories primarily federal funds such as Title I, Title II, Title III, Title IV, Title VI, the Smith-Hughes Act, Voc. Act of '63, Highway Safety Act, adult basic education, student contribution, federally impacted areas, etc.

Now moving on to the last line on the form we have the type of program being described. Now this will be vocational education, program for educationally deprived children, special education, driver education, gifted education, etc. And the further breakdown for vocational, the type of vocational program. These may be described as apprenticeship, preparatory, supplemental, cooperative, and others. We have the number of teachers. This would include not only full time but also the number of part time teachers included in this particular group of sections; number of support staff used, type of support staff used such as teacher aides, clerical aides, assistant teachers, teacher interns, specialist, leader, team leaders, area leaders, etc.

Then we have the staff in-service training sessions. This field basically describes the primary type of training that is provided to support the instruction of a given course such as summer workshops, pre-school workshops, meetings after school, during school, visits to other schools, etc. And finally the last field we have on the form is the staff in-service planning sessions. This describes the primary type of planning that is used in preparing the instructional content for a given course. This might be through summer planning sessions, weekly planning sessions, monthly sessions, special workshop sessions, etc.

Now this basically describes the form that will be used and the various data elements that will be collected through the collection phase of the system. Now as I mentioned, we have two other phases of the system that we are also concerned with, the input-edit-update phase and also the report phase. Now I believe I mentioned when we described the system diagram the individual program that would be involved as well as the various reports that would be prepared, etc.

Now as I mentioned before, throughout the development of the various documents, various stages of effort, various phases, etc., we had a number of meetings with the State Department personnel and also with the various school district personnel. I think this is very important in order to develop a system such as this. The various data elements to be collected are very much undefined and there is no real need established for these in some cases. Therefore, there has to be a gathering together of forces, you might say, to develop the various needs of this particular system.

Now the next step in developing this system after the program specifications are completed is, of course, to implement the entire system. The first phase, namely the collection phase, has been implemented at this time, the document has been



finalized at least as far as the known elements are concerned at this time and the master instruction manual has been prepared which includes the instructions for preparing the report, the instructions for key punching the report, various subject activity codes, descriptions of other codes that are to be used, the content descriptors, etc. We have also provided some consideration in this manual for elementary, some items that should be included in order to use this system for the elementary. And in addition to that we have included a glossary of terms and a number of procedures that are to be used for batching and controlling the documents as they come into the system and as they are submitted as turn-around documents to the districts for the subsequent years.

So this is basically a summary of what has been done in the State of Minnesota thus far in the development of the instructional programs. Now the next steps, as I mentioned, will be to continue the implementation as is required for the following two phases, the edit-update phase and the report phase. Now once all these programs are implemented a pilot project will be initiated involving possibly 10 to 15 or 20 districts of varying sizes. The information will then be collected from these districts and processed to the various programs to determine the adequacy of completion of the reports and also to get a better idea of exactly the value of these elements and ease of collecting them. Thank you very much.



## WISCONSIN'S PERSONNEL DATA FOR LEA'S AND SEA (part one)

Donald E. Russell  
Director, Information Systems  
Wisconsin Department of Public Instruction

To facilitate compatibility, accuracy, and timeliness of personnel data, the Wisconsin Department of Public Instruction elected to implement a staff accounting system in 19 local educational agencies during fiscal year 1969 as the first step in the implementation of the MSEIP System. The program is intended to strengthen the DPI information system by establishing a sound data base at the primary reporting level - the local school district. The program involves 19 local school districts, one in each Cooperative Educational Service Agency. The system developed in the pilot districts will be available to all other school districts in the State during the 1969-70 school year.

A project grant of \$10,000 was received from MSEIP last fall to enable the Wisconsin Department to coordinate a staff accounting project. The immediate objective of the project was to assist local school district administrators in the development of a personnel accounting system for professional and ancillary staff members which would be applicable to both manual and machine use. This would provide the personnel information needed for decision-making at the local level, and as a by-product of the system, would provide the data collected annually by the Department.

The Director of the staff accounting project in Wisconsin is Tom Stefonek and I am now going to turn the rest of our presentation to him to explain the work of the participating districts and the material developed for the project.







## WISCONSIN'S PERSONNEL DATA FOR LEA'S AND SEA (part two)

Thomas J. Stefonek  
Project Administrator  
Wisconsin Department of Public Instruction

As Don Russell has just indicated, Wisconsin utilized MSEIP implementation funds during the 1968-69 school year to develop and implement a staff accounting system in 19 local school districts.

The project had two major objectives:

1. To assist local administrators in the development of a staff accounting system for use in local administrative applications, and,
2. To provide to the Department of Public Instruction, as a spin-off of the local system, those personnel items which are collected annually by the DPI and to improve the accuracy and compatibility of those items.

We have had requests from local district administrators in past years to coordinate this type of project, and MSEIP provided the resources to undertake the job.

The project was based on the following rationale:

1. A strong need for better personnel records exists in local school districts.
2. The Department of Public Instruction is the appropriate agency to stimulate and coordinate activities regarding the improvement of staff information at the local level.
3. Adequate staff records at the local level will make possible improved staff reporting to the DPI.
4. Local administrators are the best qualified to design a staff accounting system for use in local districts.
5. Participation in the development of a personnel accounting system by district representatives promotes acceptance of the system in local districts.

The project was straightforward and simple in its approach and consisted of the following activities:

1. Nineteen local school districts, one from each of the Cooperative Educational Service Agencies (CESA's), Wisconsin's intermediate educational units, were invited to participate in the project. Recognition of the need by local educators was indicated by the fact that only 20 districts were contacted to obtain the 19 district participants.
2. A conference was held in December 1968 to inform all participants of the project objectives and procedures, to describe the resources available, and to develop plans for project activities. MSEIP and Wisconsin DPI representatives explained the Personnel Subsystem activities of the MSEIP and distributed materials developed by the Personnel Subsystem.



3. A conference was held in January 1969 to identify the personnel items which would meet the needs of local district administrators. Prior to the conference each representative received lists of potential items, reacted to these and submitted additional items for inclusion based upon personal experience.
4. During February and March 1969 the items selected were formatted in punched card formats, incorporated into tentative collection forms, and defined. Continuous communication with project representatives was maintained during the development of the tentative materials so new and revised thinking could be incorporated into each successive draft of the new materials.
5. Conferences were held in late March and early April during which final revisions were suggested and acceptance of the materials was obtained.
6. During April and May 1969 the materials received the final revisions and were printed and distributed to each participating district for implementation on a voluntary basis. In addition, copies of the materials were sent to each of the other public school districts in the State, to each of the 19 C.E.S.A. Coordinators, and a number of presentations were made at C.E.S.A. monthly meetings. An accompanying letter indicated the purpose of the project, the source of funding, the participants, and the method in which materials could be obtained if implementation was desired.

The proof of a project is in the product and the extent to which it does the job expected. In this respect, the following materials were developed as a result of the project:

1. Personnel forms for professional staff members (8,000 sets of 4 pages).
2. Personnel forms for ancillary staff members (3,000 sets of 3 pages).
3. Item definitions for professional staff member items (2,000 copies).
4. Item definitions for ancillary staff members (1,000 copies).
5. Punch card formats for professional staff items (250 copies).
6. Punch card formats for ancillary staff items (100 copies).

An evaluation of the materials would be premature at this time; however, it is encouraging that all 19 participating districts do plan full or partial implementation this year. Also, some additional interest has been generated by the C.E.S.A. presentations and the state-wide mailing of materials. It appears that several years will have to pass before the total extent of implementation can be determined upon DPI personnel data collection activities. We do feel, however, that a reasonable start has been made in the direction of more concise, accurate, timely, and compatible staff records in the State.



## PUPIL DATA IN SOUTH DAKOTA

Adair F. Callison  
Director, Pupil Personnel Services  
Sioux Falls Independent School District

In describing the work of the pupil data committee in South Dakota I am reminded of the proverbial answer the old farmer gave when he was asked how to make rabbit stew - "First you gotta catch the rabbit."

In telling about the development of the pupil subsystems handbook for the State of South Dakota, I must start with, "First you gotta get a good committee." In this respect, the MSEIP project in South Dakota, and myself as chairman of the committee, were extremely fortunate because a group of educators was selected who gave willingly of their knowledge and time in helping to develop the handbook.

I first heard of the MSEIP Pupil Data Project when Mr. Parker and Mr. Mord asked me to serve on a committee to develop a pupil accounting handbook for South Dakota. Because of a long-time belief in the need for such a handbook and because of the enthusiasm with which they described the project, I accepted.

I found the project to be most worthwhile and of great interest to both those involved and educators with whom we discussed the project. We found the work done by the MSEIP in developing the various systems to have been invaluable. I am sure that without this earlier work we would never have known where to start, much less known where to go from one time to the next. Also, it might be wise to pay tribute here to Handbook V of the U.S. Office of Education, which we found to be extremely valuable and which we used as a pattern to follow in developing the layout of the South Dakota Pupil Accounting Handbook.

The initial meeting of the committee was scheduled for Monday, December 30, 1968. At this first meeting a considerable amount of time was devoted by Mr. Mord and Mr. Bassuener to educating the committee about the Project, its purposes, and the problems with which we were to be concerned. The first meeting, like all the rest, was an all-day meeting from 8:30 a.m. to 5:00 p.m. The general accomplishments of the first meeting included the education of the committee members and the assigning of responsibilities in preparing for the next meeting. (Each meeting ended with "homework" assignments for the committee members to do in preparation for the next meeting.) Specific assignments given out at the first meeting were to examine the Definitions of Items to see if they fit with South Dakota definitions; to check the Classification of Items, using Handbook V; to go over the Coding of the Items as they were presented in the preliminary work done by the MSEIP; and to evaluate each item as it pertained to South Dakota.

At the second meeting, in the latter part of January, the committee members reported on the work they had done in the interim and the immensity of the task began to dawn on the committee as we realized that tailoring of the MSEIP would be needed to adapt it to South Dakota. Also, at this meeting the committee was joined by the systems analyst who had been unable to attend the first meeting. He was assigned the



responsibility for evaluating the recommended systems approach and developing the examples which would be used in the handbook. At this second meeting, several important decisions were made by the committee. Among these were: (1) to pattern the handbook after Handbook V, in terms of format and presentation; (2) to check with all State Department employees to see if all the items of pupil data information which the State required were being used by the State and to see if there were other items of information which might be required; in addition representative opinions of officers of the elementary principals, school administrators, secondary principals and counselors associations were to be sought in regard to additional items of information or elimination of items through personal contacts; (3) every proposed item was evaluated and discussed by the committee in terms of whether the committee felt it should be recommended or made optional for inclusion in a pupil record system, that is, did the committee wish to recommend that schools include the item or was the committee neutral in regard to the item and wish the item to be made optional (without a committee position). As a result, the final handbook presents a position for every item of information as to whether it is required by the State, recommended by the committee, or optional with the committee as to whether the school district includes it; and (5) also it was decided at this meeting to indicate if the information should be collected in unit or summary form, to be collected at the elementary or secondary level only, or both, and if it should be collected both in summer school and regular school terms or one only.

At the third meeting the committee members reported on the survey of Department and local school personnel in regard to the various items. The systems approach recommended in the original MSEIP information was evaluated and decisions made as to its adaptation to South Dakota. A particularly troublesome area was the transportation section, as the MSEIP recommendations needed considerable revision in order to fit with South Dakota school transportation laws and policies. Also the recommended coding was adjusted to provide for more unassigned numbers, thus allowing for greater future expansion. Final decisions as to the inclusion or the exclusion of items of information were made with the result that 84 items of information are mentioned in the handbook as either required, recommended or optional. These are divided into eight classifications and series patterned after Handbook V. These are: Personal Identification Information, Family and Residence Information, Physical Health Information, Standardized and Psychological Test Information, Enrollment Information, Performance Information, Transportation Information and Tuition and Special Assistance Information.

At the fourth meeting of the committee the handbooks were available in rough-draft form for the committee members to take back with them and study in more detail. Work was started on a glossary to accompany the handbook, using definitions from both Handbook V and the South Dakota Educational Glossary. Each committee member was given an assignment to check the Classifications and Glossary for any possible conflicts with South Dakota policies and procedures. Each committee member returned his assigned review section to the state coordinator, Mr. Mord, so that before the next meeting of the committee in April, a revised draft could be available. The majority of the April meeting was devoted to revising the recommended data processing format to a minimal level so that



greater flexibility could be given to each school system to develop their own systems approach. However, the coding procedure outlined in the material supplied the committee from MSEIP was used; our only concern was that we recognize that different school systems might have different computer potentials and should be free to develop their own approaches to problems of storage and retrieval. Therefore, the described systems procedure is presented as suggested procedure only.

Following this meeting the Pupil Accounting Handbook went through another draft stage and committee members were provided with the latest revised copy several days in advance of the final meeting in May. The final committee assignment was to prepare an index to be acted upon at the May meeting.

At the last meeting each page was rechecked with all committee members responsible for suggesting changes, corrections, additions, deletions and attempting to find errors. As a final step the index items were approved and included.

At the time of preparing this speech I have not seen the printed copy of the Handbook but I am sure it will provide invaluable assistance to the school systems in the State of South Dakota as they move toward compatible record systems for the storage and retrieval of information. I also feel safe in repeating my earlier statement that, without the valuable assistance of MSEIP, this project might never have been begun and probably would never have been completed. It is my hope that companion benefits of the project will include:

A recognition on the part of school administrators that a pupil data system may be incomplete without a provision to utilize data processing procedures;

A realization that the items of pupil data collected by many school systems in the past have been extremely meager and not sufficient for today's educational program and concern with the total child;

Action by the South Dakota State Department of Public Instruction on the committee's recommendation that an advisory committee be established, and a set of recommended pupil records be developed.

In conclusion, may I express my appreciation to MSEIP for their support of the South Dakota project and thank them for selecting South Dakota to serve as a pilot program. I hope our experience will be of value to other states as they move toward a pupil subsystem adapted to today's and tomorrow's educational needs.







## NEBRASKA'S EDUCATIONAL INFORMATION SYSTEM

Lawrence L. Graham  
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Nebraska Department of Education

On January 3, 1966, the USOE approved a proposal for development of an integrated educational information system compatible among the midwestern states under Title V, Section 505, of the Elementary and Secondary Education Act of 1965. The Nebraska State Department of Education has actively participated in the MSEIP from its inception, Department personnel have had a high regard for the Project and felt that many valuable ideas and benefits will eventually come from it.

Demands are made on all state departments of education by legislatures, local school districts, and the public to provide information for their use. This can be done by comprehensive planning and experimentation by the state departments of education.

Comprehensive planning is dependent on the management information system. Effective management information systems must provide, (1) a basis for establishing priorities and goals; (2) a basis for continual revisions in the planning activities; (3) an evaluation of the effect of the activities undertaken.

The achievement of these points is necessarily dependent on comprehensive and reliable information. Educational agencies need information with which to describe, measure, analyze, evaluate, predict, regulate, and control educational programs. The MSEIP maintains that a significant component of a "complete management information system" is program oriented, or a performance budgetary system. It permits an evaluation of the budgetary efficiency of various programs, both within the state educational agency and educational system in the state.

Nebraska has collected data in each of the areas of educational information with emphasis on pupils, personnel, educational programs, and finance, with a minimum on facilities. The data has not been collected in such a way, however, that information in one subsystem could be integrated with the other four. If the data in any of the subsystems is to be meaningful, there must be a way to relate it to the data from the other areas. Financial data by itself is meaningless, it becomes meaningful only when it is related to the entire educational program - pupils, personnel, curriculum, and facilities.

Last October, the Nebraska State Department of Education entered into a contract for consulting services with the Aries Midwest Corporation of Minneapolis, Minnesota. This contract called for a basic information system study into six key areas of the Department. This was the initial step in the development of the MSEIP System in the state of Nebraska, and is tailored to the particulars consistent with the organization and needs of the Nebraska Department. This basic information system study included investigation into the following areas: (1) The present Nebraska SEA functions were analyzed as they pertained to the existing information system in



light of and in correlation with the MSEIP System. (2) Secondly, the data items within each of the five MSEIP subsystems were examined for pertinence to Nebraska. (3) The study was to concern itself with the most economic, accurate, and expeditious source of data collection, and as a result develop corresponding collection documents for each of the five MSEIP subsystems. (4) Fourth, the data file formats for each of the MSEIP subsystems were examined and the pertinent data items to determine the most efficient and appropriate data file formats for each. In addition, the study was to include file structuring procedures for building each of the subsystem data files. The selection of appropriate and pertinent data items and efficient and appropriate data file formats were done with current and future applications in mind. (5) As this is the initial step in the development of the MSEIP tailored system in Nebraska, it was necessary to outline the functional responsibilities of the SEA personnel who will be involved in the implementation of the Nebraska information system. (6) Finally, the last item which was included in this information system study was the determination of the interface requirements and methods involved in the addition of the Vocational Rehabilitation Subsystem to the basic subsystems.

The result of this information systems study is a report, which represents the tailoring of Nebraska's needs to the MSEIP System. This report and the MSEIP Documentation, published last August, should compliment each other and hopefully place Nebraska on the threshold of implementation of an information system.

I would like to go into a section by section discussion and analysis of the differences between Nebraska's needs and those of the MSEIP System as specified in its August Documentation. The first section is that of the system design. Basically the design specified for Nebraska follows very closely that of the design specified and called the Data Control Modules in the MSEIP. This design integrates the five subject files. It is not simply one huge bucket of information, into which all data pertaining to all facets of education are dumped as into a magic box, and a turn of a crank jumps useful information out at the right people, at the right time. Instead, the system is a logically defined structure containing information on categories or functions performed. Each part here and after referred to as a subsystem contains information and primary categories that are linked or related to the administrative center of activity. In this system the special needs of the Nebraska Department can be defined in six major subsystems: Pupil Data, Financial Data, Facilities Data, Instructional Programs Data, Personnel Data, and Vocational Rehabilitation Data. Each subsystem comprises multiple records of information formatted and sequenced in a logical manner recognizable by the system.

The second section of this report consists of a forms log. These forms logs contain the following types of information. The number of the form, if one existed, the name or title of the form and the subsystem or subsystems which the items contained within the form pertained to. In addition, the section or division in which this form was collected was also specified. Nebraska, as is the case in most states, collects a multitude of information on a multitude of forms. One of the goals of this study was to get a listing



of all the forms and then be able to determine how many forms are collecting the same information, so that in the future possibly one form could take the place of ten. The second portion of the forms log consisted of the subsystem form log, which was separated into six sections as specified by each of the subsystems. In each case the sections contain the same categories of information. They contain the data item name, the MSEIP designated field number, the size in digits and characters, and whether the characters were alphabetic, numeric or alpha-numeric. The key portion of this forms log, now, is a listing of all of the major reports or forms on which each of these data item names were contained.

The rest of this report consists of in-depth discussions concerning each of the six subsystems. The first subsystem described is Facilities. The primary task of this subsystem was to provide and maintain a data base containing data elements describing the physical school facilities. This subsystem description followed very closely that of the MSEIP Facilities Subsystem in that the Facilities Subsystem and file were made up of four types of records. The site records contain information on a given site; building records indicate characteristics of a particular building; the space record contains information about each space and the vehicle records contain information describing all of the vehicles used within each of the districts. In the beginning of this study it was thought that the space record would be eliminated because of its relative detail. However, as time went on, it was decided that this record would be left in for future purposes. As a result, this record is not currently applicable to Nebraska in data collection requirements, yet has been included in this report for possible future use.

The second subsystem detailed in this report was that of the Finance Subsystem. In the Finance Subsystem we departed somewhat from that of the MSEIP System. This resulted from the feeling that school finance requirements can be met only through the development of a comprehensive system for classification of legated funds at the district level. As a result of the district level approach, the Finance Subsystem as defined and described for Nebraska was designed with the objective of developing a system which would be amenable to the practical demands of running a school district. The system defined should fulfill both budgeting and accounting requirements for a district and it should be modular in characters so that smaller school districts could utilize those segments which are appropriate for their requirements. Consequently, the finance system described in the report conceives a method of budgeting for expenditures at the lowest practical level and this allows reporting actual expenditures against its budget in a meaningful way.

The third subsystem described in the report is the Instructional Programs Subsystem. The primary purpose of this subsystem is to provide a means of gathering and storing data concerning the curriculums of the schools of Nebraska. Storing this data in a system context allows the SEA officials access to it in a simple and effective manner. This subsystem also represents somewhat of a departure from the MSEIP Instructional Programs Subsystem. Specifically, there were three primary areas of departure. Nebraska's needs could not relate to the desirability of content descriptors. Content descriptors are a series of codes associated with each instructional area and are used to describe the content of a particular course or section.



Secondly, local course number did not have relevance in Nebraska. The third area of departure in Nebraska involved a different definition of course codes and instructional areas and as a result instructional area is not a part of this report.

In place of the instructional area, the local course number, and the content descriptors, were substituted teacher assignment codes. These are the Nebraska professional staff codes which describe the course the teacher is teaching. In combination with class numbers they identify each specific class that the teacher is assigned to.

The fourth subsystem in this report is the Personnel Subsystem. The purpose of establishing an automated personnel system at the SEA level is to enable the SEA officials to officially and accurately fulfill the administrative responsibility in the area of personnel in which they have been assigned. This subsystem as described here must be used in conjunction with the Instructional Programs Subsystem and supplied with certain data items from the teacher certification collection forms. The use of the subsystem in this manner allows the data collection forms for personnel to be smaller and less complex.

The Personnel Subsystem as defined in this report follows very closely that of the Personnel Subsystem defined in the MSEIP document. However, the items to be collected on the personnel form are not all-inclusive; rather, many of the personnel items, as has been mentioned before, are picked up by the Teachers Certification collection forms and the Instructional Program Subsystem collection of forms described earlier. Information collected from these three sources is combined and entered as one separate Personnel Subsystem file. Nebraska did not feel a need to collect information on the technical or ancillary personnel and none appear in this report.

The fifth subsystem in this report is the Pupil Subsystem. Its main function is to process information pertinent to Nebraska pupils for the calculation of state aid under Legislative Bill 448 and for other statistical purposes including the production of reports for the documents, statistics and facts about Nebraska schools and for reports required by the USOE.

This subsystem represents a radical departure from the MSEIP System in that only summary information is designated as desirable to collect. This decision was predicated upon the following reasons: (1) Over 80 per cent of the reporting requirements are in summary format, and as a result, why jeopardize the effectiveness of the total system with massive data for only 20 per cent of the reporting requirements? (2) Individual reporting requirements are dynamic in nature and frequently change on a yearly basis, many times depending upon changes by the Office of Education. These changes usually reflect new collection documents and new information and often burden the original design of the information system. Because of the large number of pupils, the overall volume of data can be reduced substantially if information is collected in summary format effecting a faster and less time consuming reporting system. Lastly, but probably most important, the only sections that really had a requirement for individual pupil information were the Vocational Education, Special Education, and certain requirements within Title I.



Other departures occurred in the area of the Pupil Subsystem. Summary information collection was designed to be collected in the fall of the year, shortly after the first semester, and at the end of the year. This departure from MSEIP results from the fact that much of the data that was to be collected in the fall of the year is absolutely necessary at that time of the year. Whereas much of the information concerning the handicapped student is not available and is not known until shortly after the first semester. Finally, much of the information collected at the end of the year involves financial data and must be collected at that time.

The last subsystem, the Vocational Rehabilitation Subsystem, was patterned after a system currently being implemented in Minnesota. Primary function of the Vocational Rehabilitation Subsystem is to maintain the Statistical and Financial Accounting System and Vocational Rehabilitation Clients and to provide for some interfacing with other agencies such as the Disability Determination Unit and Accounting. This Vocational Rehabilitation Subsystem was designed as a stand-alone system as compared with the other five Education Subsystems. However, certain linkages could be included to enable later use with the Personnel and Finance Subsystems which at this time, and at the time of this report, did not seem feasible.

This section contains a detailed description of the Minnesota Vocational Rehabilitation Client Subsystem as tailored for Nebraska. This subsystem, or section of this document, is specified in more detail than any of the six subsystems because of its current operational, fully specified and documented status.

The last section of this document is the implementation plan. It contains a general discussion of the steps necessary to implement the Nebraska MSEIP tailored system. This plan includes detailed software requirements, detailed equipment requirements, a recommended organization structure that would be responsible for implementing the system, and a time schedule to totally implement the entire system.

It is thought that the proposed integrated system will be a major revision in the present quantitative data handling practices in the State of Nebraska. Because of the sheer magnitude of effort required and a multiplicity of organizational units and individuals affected, the initial implementation will take several years and continuous revisions will be required. We feel that the study was a necessary part in the eventual implementation of such a system in Nebraska. We feel the design specified by the MSEIP System and tailored for Nebraska should be practical yet revolutionary with respect to what is currently being done. We feel that the designers have attempted to make the design workable and advanced, yet not esoteric. We feel that the Nebraska Basic Educational Information System is intended to demonstrate the benefit of using currently available technological methods in state government and to serve as a leader in educational systems nationally.



The first part of the paper is devoted to a general discussion of the problem of the origin of life. It is shown that the problem is one of the most important and interesting in the history of science. The second part of the paper is devoted to a detailed discussion of the problem of the origin of life. It is shown that the problem is one of the most important and interesting in the history of science. The third part of the paper is devoted to a detailed discussion of the problem of the origin of life. It is shown that the problem is one of the most important and interesting in the history of science. The fourth part of the paper is devoted to a detailed discussion of the problem of the origin of life. It is shown that the problem is one of the most important and interesting in the history of science. The fifth part of the paper is devoted to a detailed discussion of the problem of the origin of life. It is shown that the problem is one of the most important and interesting in the history of science. The sixth part of the paper is devoted to a detailed discussion of the problem of the origin of life. It is shown that the problem is one of the most important and interesting in the history of science. The seventh part of the paper is devoted to a detailed discussion of the problem of the origin of life. It is shown that the problem is one of the most important and interesting in the history of science. The eighth part of the paper is devoted to a detailed discussion of the problem of the origin of life. It is shown that the problem is one of the most important and interesting in the history of science. The ninth part of the paper is devoted to a detailed discussion of the problem of the origin of life. It is shown that the problem is one of the most important and interesting in the history of science. The tenth part of the paper is devoted to a detailed discussion of the problem of the origin of life. It is shown that the problem is one of the most important and interesting in the history of science.



## AN OVERVIEW OF PROGRESS TO DATE OF THE ASBO'S NATIONAL RESEARCH PROJECT IN PPBES

William H. Curtis  
Research Project Director

A year and one-half ago the Research Corporation of the Association of School Business Officials was given the grant by the US Office of Education to carry out a research project in the field of planning-programming-budgeting-evaluation systems design. Now there were three basic charges to the Research Corporation when it accepted this contract: 1) it had the responsibility of reviewing the literature that has been developed and of establishing liaison with other projects underway; 2) it had the responsibility, and this is the main thrust of the project, of developing a conceptual model in planning-programming-budgeting-evaluation systems design which will be suitable for the school districts of the United States and coupled with this it was also given the responsibility to disseminate information concerning the conceptual model during its developmental stages and then to obtain feedback and go through the refinement process; and 3) by June 30, 1971, it is the responsibility of our organization to have a model ready to turn over to the US Office.

This project was developed in partnership with the Dade County Public School System of Dade County, Florida and this county has remained as a partner. Basically, Dade County has the responsibility of developing a design in PPBES which would be workable, acceptable, and adaptable for the Dade County school system. In the developmental process Dade has the responsibility of sharing its findings with us and, of course, with other interested school districts throughout the country. As your chairman indicated, I retired from the superintendency last June and did not take up this assignment until the summer, and consequently, the Corporation did not have a staff until five or six months after the project was funded, so we had a great deal of catching up to do.

Briefly I shall try to indicate to you some of the accomplishments of the last few months of our somewhat limited staff. We did note almost immediately that it was our responsibility to establish working relationships with other projects and almost my first assignment last summer was to attend the MSEIP conference here in August. We have maintained a liaison with MSEIP and will continue to do so because its development, as I'm sure you'll see later on in my presentation, will have many implications for us, and we in turn, for you. So we have maintained a liaison with your director, Jim Mitchell, and others, and even in an indirect way have had a liaison with your previous director in that Sam Bliss is one of our committee of six consultants and has remained in that position with us. We've established some rather strong working relationships with the National Education Finance Project, the California project, and several other state and regional efforts.

Early in our effort we noted the great need for some kind of bibliography of some of the literature which has been put forth in the last two or three years. So we prepared an annotated bibliography of what we consider some of the more effective writings in the field of PPBES. This was published last December or



January, and was distributed to the entire ASBO membership as well as to the entire membership of AASA, so there was a distribution of some 23 or 24 thousand copies and we have been distributing the remainder of the current supply on request. If our current budget allows it, or our plans for the next year allow it, we hope to bring this bibliography up-to-date. I might add, this bibliography is not just the literature reviewed by my office. We had a committee of consultants backing up this effort; they reviewed the document so the bibliography items selected represent the considered judgment of several persons.

Early last fall it became evident to our office that we needed additional backup for our studies beyond the partnership of Dade County. Now this in no sense represents anything against Dade County. It has been a fine partner, but we felt that it represented only one type of school system. So much of the fall was spent studying much of what is being done around the country by individual school districts. As a result we have selected and have been working with eight additional pilot districts; districts that have varying characteristics from the standpoint of size and affluency. Some of them are very, very small; some of them are large areas with a small number of youngsters, all the way up to the selection of certain big cities that will serve as a backup, so to speak, for the work of the Dade County school system which, incidentally, is now the seventh largest school system in the United States.

We have been most fortunate in identifying an excellent committee of consultants and also backed up by an outstanding panel of experts from the leadership of the country. We are calling upon the committee of consultants extensively for advice and some of what I present today will represent the considered judgment not only of our staff and our pilot districts, but will represent a great deal of input from the work of the committee of consultants.

I'd like to take a moment or two now to set the stage for the remainder of what I have to say. I would like to commend you because your Director and your committee have seen fit to place the subject of PPBES in a strong focal point on the program. I can't begin to tell you how important it is to keep this subject in front of you from this point on. I suspect that many of you realize the way that the world of PPBES is developing. You heard your state superintendent speak about it yesterday morning; you heard Superintendent Page emphasize it in his keynote address. I knew something about it before I took this assignment, and had been involved in it in a small way, but I can't begin to tell you the surprise that was mine when I found out how rapidly this is developing across the country. The extensive interest of state officials, the extensive interest of the political world, legislatures -- I think someone indicated yesterday that some 38 states have mandated or plan to mandate legislation involving PPBES. We find a tremendous interest in the US Office of Education and we find a great growing interest on the part of people in education.

However, let me point out some pitfalls. I am finding, for example, and this is supported by others, that much of the leadership for this is coming from persons in the school business division, and not as much from the school administrators, and not as much from the segments of the state departments. Now I'm



not saying this in the way of criticism, but in the way of importance to each and everyone of you of having the entire leadership involved in this. Now part of this is due to lack of understanding, part of it to apathy, and part to the fact that many of those in leadership do not understand what is taking place. I would also point out to you the great and rapid increase of literature on this particular subject, much of which is very good but I'm afraid also too much is duplication. And in my own case the stepped-up correspondence and number of phone calls that we are receiving show the increased interest. Unfortunately, again, much of this is due to pressures coming from outside the world of education. I think this is unfortunate. I can't emphasize too much to you in education the importance of getting into a strong position of leadership in the development of this new field.

I'll list a few of the major problems that are being encountered across the country and these are not necessarily in relation to our own project, but are to some extent. For example, all of us are under great pressure to bring forth a PPBES model right now, not two years hence, and to release information prior to reaching consensus on some of the major issues in the developmental process and to produce "pat" answers for all segments of the process. Let me digress just a moment, in case you have not been involved directly, and I know that in some way most of you have; but let me re-emphasize the fact that this is a very complex business. It is one of the most complex problems with which I have been associated in an educational career of some 37 or 38 years and so I suggest that you don't take it lightly. It is a problem that is going to take a great deal of time to develop. It won't be done in one or two years, and I dare say that our model when it is completed on June 30, 1971, it will be just the beginning.

I received a call approximately three months ago from a state department official in a state that shall be nameless, and he was in somewhat of a panic. He said, "I've just seen the mandate from the Governor and from the legislature to develop a PPBES model for our state." Now this was in January. I said, "What's the problem?" And he said, "The problem is that I've been asked to have it developed and ready for operation by April 1." Those of you that have had any connection with this know the futility of such an effort. Now his only statement to me was, "Please give me all the reasons why I can't do it." Needless to say, that wasn't any effort; I gave him all the reasons, and I've seen him since and he said that he had managed to stall off the pressures. But, this is the sort of thing we're feeling all over the nation, and we're going to get it from the legislators, we're going to get it from our constituency, and again I emphasize the point of being in the lead, in the vanguard, in this development.

Another problem, another concern, is the lack of coordination we're finding between various projects. Now, I don't see this as a fault of anyone, I just see that there's so much interest on this on the part of the US Office, the state department, individual school districts and their constituencies to get something underway in a hurry. And it may not come as a surprise to you, but it did to me, that there are some 8 - 10 major projects on this in the country and there are some 75 - 100 minor ones, all trying to do a job, many of whom feel that they have developed a PPBES model. But I'll make a statement to you which I've made to all the other audiences I've spoken to in the last few months. In all of my travels in the last



few months -- and this represents some 80,000 miles since last August -- I have yet to find an individual state or an individual school district in the country that has truly planned for, and developed and implemented a total PPBES system. If anyone in this audience knows of such a system, or a state that has such a system, that is workable, that is implemented, will you please tell me. We're searching for it, we need the feedback from that type of operation.

Another problem, I've mentioned it to some degree and I shall re-emphasize it, is the failure, still, on the part of so many leaders in the field of education to realize and accept what is taking place. As I indicated, it would appear, unfortunately, that there is more reticence on the part of some of the top leaders and in the middle management area. But I think this apprehension is due to a lack of knowledge. Also there seems to be a fear on the part of some educators that this new process will unveil too many weaknesses in their administrative patterns. And I have to say that this is probably true; but I have to say, on the other hand, in my opinion any school administrator worth his salt, if he is a true leader, will be willing to accept the fact that there are weaknesses in his operation. I have yet to meet a school administrator that is a sound leader in his school district that was not willing to admit that there was plenty of room for improvement.

Another problem will be familiar to you, but I must bring it again to your attention; the problem of just plain everyday resistance to change. In other words, we're satisfied with the way we've done it and what's wrong with this and why upset the applecart?

Now, going slowly on the next part because it represents the focal point of the remainder of my presentation, I'm going to give you just quickly a review of the problems to date that we have encountered structure-wise. As far as we can determine, much is being done in this country in the name of program budgeting, but little, as yet, in a true PPBES approach. Now, I know that there are times when PPBES goes under the name of Program Budgeting. And in some ways, I think that this is most unfortunate. Program planning or planning and programming, I don't care which way you express it, but emphasize planning, emphasize planning as it relates to programs and sub-programs and alternatives; in other words, program planning and the evaluation, the assessment process, are being neglected. In the first place it's much easier to get a program budget and take your programs and develop an accounting procedure related to them and translate it into a process that may or may not use data processing equipment. Too many people are associating the world of electronic data processing to PPBES and saying this is it. Now I'm not about to play down the world of electronic data processing, this can become an integral part of the overall process, but it is only one small part of planning-programming-budgeting-evaluation systems design. I'm afraid there is still too much emphasis, or tendency, to relate too closely to the current function-object, line-item approach that we've been used to for so many years. We're also finding that semantics and definitions represent quite a problem and probably will for some time to come. We're trying to do something about this with representatives of several other projects who have asked us if we would take the responsibility of developing a common glossary



of terms and distribute it among their forces for feedback, and hopefully it will develop commonality within the next year. We're trying to do that, and in our first drafts we will come out with what we consider a suitable glossary for review and feedback.

The next problem, and just as important as the one that I just stressed to you, because it has a direct relationship to it, is the problem of keeping the focus on the student and what takes place in the classroom. I refer you again to the comments of your state superintendents yesterday morning, and particularly the opening address by Superintendent Page. Several times in his presentation he talked about the importance of what happens to youngsters. We feel this is fundamental; in other words, the instructional programs must be the focal point in PPBES programs. We intend to keep it in that place and when it loses that place, I intend to leave the project. I want no part of a project that doesn't keep the youngsters and the instructional programs first and foremost in the operation.

And the final problem, and I think you people in MSEIP can support this probably better than anyone else, is the almost unsolvable problem of satisfying each of the 50 states. I'm talking about the variance in the state laws and the reporting processes and I'm talking about the varying support programs and state formulas, the varying degrees of fiscal independence and fiscal dependence, and the varying sizes and characteristics of the school districts along with their wide range of educational needs and problems of all kinds.

And now, what has been the consensus to date? We're reached a consensus on rationale, up to a point; it's still subject to review. Our partner, Dade County, set forth a tentative rationale which we have reviewed with their team and which is expressed as follows:

The purpose:

The rationale for advocating the adoption of the PPBES system in a school system is the belief that: a) it will provide responsibility centers with more and better information for planning programs and making choices among the alternate ways that funds can be employed to achieve the objectives of the school system, and b) it will aid management in the decision making process by assisting in the development of improved ways, through analysis and evaluation, of achieving the objectives faster and more effectively.

The Need:

The scarcity of resources and the increasing demands of educational requirements have made it abundantly evident that only by obtaining the most beneficial results with the funds available will it be possible to attain our objectives.

The traditional line-item, object-of-expenditure budgetary presentation does not lend itself to analysis and evaluation and the continuous



process of examination. Thus, it is evident that a need exists for a means of bringing all planning-programming-budgeting-evaluation activities for the school system into an integrated system for continuous use by management throughout the year. The PPBES concept indicates that it should be qualified to fulfill this need.

There is a great need to develop a model (or models) suitable for all; small, medium and large districts and for the less affluent, the average and the more affluent.

There is a great need to indoctrinate everyone with the importance of reaching agreement upon basic goals and objectives to be achieved, coupled with effective long range planning. In other words, it's futile to think in terms of the approach that we've been using from year to year. The whole concept of PPBES is built around the idea of long range planning, how long, I don't know. We're inclined to think somewhere around three to five years makes sense, but as yet we're not about to commit ourselves to a final statement.

The conceptual model must reflect a pupil-centered character with emphasis upon the instructional approach.

Assessment (evaluation) as it relates to degree to which the objectives have been attained continues to be a knotty problem. However, we are in agreement that not everything can be quantified and that there will still be rather a high degree of subjective measurement as compared to valid, accepted, objective measurement.

Now I know some of you know of the hassle concerning assessment, and I know that many of us were involved in the controversy two or three years ago, so I hasten to tell you, not speaking against assessment as such, or evaluation, I think it's an integral part of this, I merely want to emphasize that not all of the objectives, in our opinion, can be measured in terms of the instruments that are now available. A certain amount must be in terms of subjective judgments, but in our opinion, this is all right; we want all to be measured to some degree, somewhere, whether it be objective or subjective judgments.

Well, what about the direction our model seems to be going? We have developed a series of schematics which was presented to a national conference in Denver, June 10. In addition to the Denver conference, we will be having regional conferences in the fall all around the country; we will have the professors' conferences, we will be having critical reviews with our own committee of consultants, by our panel of experts, by our pilot districts, by other districts, and I dare say that many of the people in this room some way or another will ultimately be involved in the evaluation process, in the feedback process.

I have with me a few transparencies which will show you some of the pathways that we think the model is going.



## 1. Educational Resource Management Design (ERMD).

We have chosen to try to develop a new title. This is not necessarily final. It has been thought that too often the use of the title PPBES relates too much to the industrial world and inanimate objects. We're dealing with human beings, so as a point of beginning we have selected a title to say that we are attempting to develop an educational resource management design. We thought that education should be in the picture somewhere. Obviously the design must be built around resources and their effective use and allocation. It is a management tool in the decision making process and it is a design. Now we also sometimes use the sub-title "PPBES in Education," and put it in paranthesis under the title.

## 2. The Relationship of School and Society

We begin with the idea that education is an integral part of society, the degree to which it is an integral part of society will depend upon you and your individual school districts. But more important, and I'd like to emphasize this to you, resources, inputs to this operation, are listed in terms of people, materials, values, time, and environment, and not in terms of dollars. Dollars are the means of getting resources. But too many times I've heard of resources being mentioned as only dollars. We're trying to dispel this idea. Now, I'm realistic, I know dollars are a big factor of course, but we're trying to build on the idea that resources are the inputs leading to the educational process as an integral part of society, and outputs are measured in terms of the development of the learner; skills, attitude and knowledge.

## 3. The Major Phases of ERMD

The model begins with basic planning, planning leading to programs. It goes on to alternatives, a very important part of this process, and finally goes to the budgeting process and then evaluation; evaluation in terms of the objectives established, evaluation in terms of the program selected to carry out the objectives, and then evaluation in determining how well the objectives have been achieved. And it's all built around the idea that this is part of the planning-decisioning process. The four segments have a re-cycling aspect; in other words, it's important to realize that at any time in the planning-decisioning process you can go back and recycle and this, in our opinion, is one of the great secrets in the development of the PPBES operation.

## 4. Component Events in ERMD

We have related this again to society and the desires of society beginning with the inputs, the identification of the objectives from the standpoint not of what your school system wants only from within the school system, but what your constituency wants. In other words, we're suggesting the total involvement, involvement beyond the school system, especially when it comes to the broad goals and the broad objectives to be achieved. This is fundamental and these must represent the first steps. We can reach out and involve the community, two of our pilots have done quite a bit in this reaching out and involving various representatives of the community in



various walks of life, the board of education, the youngsters to a degree, and of course, the professional staff. Going through that planning process leads to programs that will carry out the objectives, the broad goals and objectives and the series of sub-objectives, all leading to allocations according to the budgetary process and finally through the matter of inputs and outputs.

#### 5. Developing Objectives

Now going back to the development of the broad objectives, the broad goals, we're suggesting that here again you must start by activating and organizing your human resources, and this should be a total effort by the community, the staff and the students.

#### 6. Screening Objectives

With these groups acting together you identify and define the problems and determine the priorities for your community, because regardless of how many resources the individual community has, you know you cannot meet all your desires. So you establish your priorities in terms of your resources and then this leads to the establishment of the potential of the broad objectives, again the total effort as suggested.

#### 7. Examples of Objectives

This then bring us to the screening for relevancy in the terms of societal needs, learning needs and the educational philosophy desired by the school system and by the school district; then refinement and agreement on the broad objectives and finally the adoption by the legally constituted body of your school system. And it is at this point that the effort of your community tends to diminish to a degree, I don't mean to forget it, but it diminishes to a degree in relation to the greater degree that you reach out and involve the professional staff. You established and agreed upon your broad goals and objectives through the development of a series of sub-objectives and sub-programs that are needed to carry out those basic goals that you have established by total agreement.

We have suggested for example the broad societal goals could be the imperatives of education as published by the American Association of School Administrators about four years ago; it could be, I say, it's up to you in your individual school system. We will not attempt, nor do I feel that any project should attempt to develop the goals or sub-goals of a school system, this is the responsibility of the local district. In our project we will give specific examples, we will try to give several examples of varying types, but we do suggest that the societal goals or the broad ones could be the imperatives. And then we suggest as an example of a broad objective could be for every child to read, write, speak, spell, and listen commensurate with his abilities. Then getting down to a specific objective leading off from that one, and this was developed by one of our pilots which has now reached the point where it is



developing many hundreds of examples of objectives and we took some from theirs, for every child to comprehend printed materials at individual expectancies as measured by the comprehension sub-tests of the Gates McGinitie A, B, or C, as a very specific objective. In the development of this process there will be hundreds of these objectives.

Time does not permit me to go into the remainder of these transparencies so I will merely point out some salient features. You take a broad objective and from it you develop a series of sub-objectives, sub-objective 1 to sub-objective n, now there may be 2 or 22, or 102, depending on the objective and what you need to accomplish. We're suggesting that this leads into the establishment of the sub-programs that you need to carry out the specific objectives. Then you begin to think in terms of the resources that you need to help to carry out the objectives from the standpoint of personnel and materials and other required resources that you will try to get, or you hope to have available, or somehow you will try to find either from within your district or from without.

We're suggesting that in this identification process of the sub-objectives and sub-programs you must establish a series of alternatives; alternatives in terms of your resources, alternatives that will be available to you. And may I suggest it isn't based, as someone has suggested recently, on the cheapest method. The cheapest method may be the one that will defeat you. It's based upon the effective use of resources in the attempt to carry out the objectives desired by your school district within reasonable limits of your available resources.

Having selected the sub-programs related to the sub-objectives, we now come down to the point of establishing program categories. Now at the moment we're talking about five of them, instructional general, exceptional, support, non-instructional support, and community service. But remember something I said at the beginning, if you will, that instruction is a very fundamental part of this model, and so the offshoots in terms of budgetary allocation come from these five divisions. You may say, "I don't think this is right, I think this could be condensed." This is your judgment, this is your privilege. We're not saying this is final. We're trying to set up a pathway which ultimately will lead to allocation according to the needs of your community and your state in a reporting procedure.

Our sub-committee that deals with the accounting procedures and qualifications has suggested that we might try to divide this into five divisions, namely; program, vocation, object, project category, and fund category. I call your attention to the program category and the relationship to instructional general, or it could be instructional exceptional or instructional support, all leading to the objectives of the specific sub-programs. This begins to represent the pathways that this will follow once you have gone through the planning, programming, review of alternatives, and decision making process, all leading to allocation in the budgetary proceedings. And having prepared the budget document along these lines, you are then ready for approval of the board of education.

The remaining transparencies deal with procurement of resources. Once you've developed your budgetary outline, you will go through an evaluating procedure. We're



taking the attitude that evaluation, once we have established the programs, begins with a look at the learner's condition measured at that point. We suggest measurement at a certain point as the program progresses, we suggest another review as the program progresses, and we suggest another here, all based on the individual principle of each youngster as a program. Again it's built around the youngster and is built around the basic idea that evaluation continuously feeds back to the establishment of objectives and what you are trying to accomplish.

Our model will contain detailed schematics and a series of sections that will deal with the how-to process, the glossary of terms, how the school system goes about the job of planning and programming. It will take a look at the educational process today and tomorrow, and it will deal with each of the separate items of planning and evaluation and their relationship.

Some observations and conclusions:

1. It is our opinion that this new approach should result in a more objective look at what we are trying to do in education, how well we have done it, or are doing it, and finally, how to go about the process of creating change and improvement.

2. This new approach to the decision-making process should help to build greater support and confidence in our school systems on the part of the public.

3. Obviously, it should result in better long range planning, better involvement (staff, students, community) and therefore more effective use of resources.

4. The model (or models) when completed and refined must provide an overall pattern (or patterns) for school districts of varying sizes and characteristics and must give them "room in which to move."

5. Emphasize the importance of developing massive inservice programs in this new approach so that staff involvement will be more effective. Stress the important role which administration at all levels must play in giving leadership to, participating in, and encouraging staff members to participate also in various types of inservice programs.

6. Remember, it is rapidly becoming accepted that the sound approach to the budgetary process of the future will be based upon some sort of design involving effective identification and use of resources, establishment of desired goals and objectives, careful program planning, development of alternate patterns for the decision making process, more sophisticated methods of allocation and accounting, and finally, an evaluation program to determine accomplishments in terms of established goals and objectives.

Therefore: As a suggestion, despite any reservations you may have about this new process, be concerned with it, learn more about it, accept the principle involved. Instead of sitting back and wondering about it and criticizing it, be a part of it and give your leadership to it. The capabilities in this room are extensive its's obvious to me as I listen to your reports. Be a part of it and be an effective part of it.



## PUERTO RICO EDUCATION MANAGEMENT SYSTEM

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### Introduction

The school system of Puerto Rico services over 700,000 children each year - a magnitude of operations comparable to few school systems anywhere. Its problems of administration and operation are second to none in the U.S. The source of these problems can be related to a few easily recognizable factors such as population size, income, operating cost.

During the last 28 years, the population of Puerto Rico has increased by almost a million people, a gain of 69 percent. School population has similarly increased; however, 28 years ago only about half (51 percent) of the children of school age attended school, whereas today, about 80 percent attend. This, of course, has caused an increase in school population of 236 percent. The implication of such a growth rate on school facilities, teachers, teacher training facilities, the pupils themselves, and the community, in general, can be readily imagined.

Obviously, the cost of education has risen during the same period. However, the rate of cost increase has been more pronounced than the rate of student population growth. The extraordinary increase in costs, from about 26 dollars per pupil in 1940 to about 280 dollars in 1967, results from an attempt by the Department of Education to provide regular instruction in a normal classroom, with an acceptable ratio of pupils per teacher, an objective which has not been reached fully, despite the progress which has been made.

While the rate of expansion in education has been notable, the need for further expansion and higher costs is still great. In 1964, Puerto Rico spent 33 percent less than the lowest state, 58 percent less than the national average and 73 percent less than the highest. The relative situation is still true. Based on this index, Puerto Rico will have to more than double its present educational expenditures to reach the national average now. The general economy in Puerto Rico, of course, has prevented this from being done. While the rate of economic development has been increasing, the rate of increase in educational expenditures has been more rapid. It has been estimated that present expenditures might be doubled in 1980; indicating a decrease in the rate of increase in educational expenditures.

The problems which the Department of Education faces in Puerto Rico can be summarized in a single question, "How can education, adequate to the needs of Puerto Rico and Puerto Rican children, be provided within the resource limitations which exist?" If an approximate solution can be found to this problem, it is clear that the solution will entail evaluating the effects of those educational programs in operation to determine which are more effective, scheduling available resources to



obtain optimal effects within the extent of resource capability and, finally, making administrative and service operations more efficient so as to extend resources as far as possible for substantiative effects. Program evaluation suggests that data is required, and considering the magnitude of operations in the Puerto Rico Department of Education, indicates that large quantities will be involved. Evaluation also implies the use of statistical procedures for data analysis. It was for these reasons, among others, that the Department undertook the development of an educational information system as an aid to solving its educational management problem.

From the outset, it was planned that the system include a comprehensive base of information about pupils, teachers, facilities, and costs; a computer system, and a system of programs for maintaining and analyzing the data base. The system is still under development in the third year of the plan; however, a major part of the system has been operational for about a year and significant extensions are planned for the end of the current fiscal year to complete the development. The facet of the system which is of most general interest to data processing is the program system which has been given the acronym, PRESS, from Puerto Rico Educational Statistical System. The objective of this presentation is to describe the PRESS system, to illustrate its application to a typical problem, and to discuss its use in the context of evaluation.

#### System Scope

First emphasis has been placed on the development of a capability to evaluate the effects of operating educational programs. In very general terms, programs are directed toward causing academic achievement on the part of the pupils, as might be indicated by course grades or standardized achievement tests. New or innovative programs are generally directed toward improving achievement, or, in other words, changing the rate of achievement. However, some programs are more indirect in that they attempt to influence pupil motivation or general cultural development as might be indicated by pupil attitudes, school attendance, or general deportment. These types of criterion measures, of course, may be affected by many factors other than the educational programs, such as pupil home environment, previous educational experience, teacher experience, teacher attitude, school facilities, and so on. To sort out the effects of a particular educational program, then, it is necessary to obtain, analyze and take into consideration a large amount of data which may be related. This emphasis and these considerations contributed to the formulation of requirements for a large data base which could be maintained over a period of time to reflect the changes, programs, facilities, achievement, or other events that might occur in the educational process.

A sample of 21 out of 81 districts was chosen as a source for creating a pupil file of almost 200,000 records. (Since the file is used as a means of providing educational services, such as test score profiles and academic record profiles, the file will be expanded at some point to include the full student population.) The staff file was designed to include all 34,000 teaching and non-teaching personnel and the facilities file, all 2,000 schools. In addition to these, major accounting subsystem files were required along with numbers of special evaluation and application files. While maintenance transactions are not frequent on the educational files, about four times per school year for pupils, the volume and type of processing is such as to require extensive operations in a multi-programming mode.



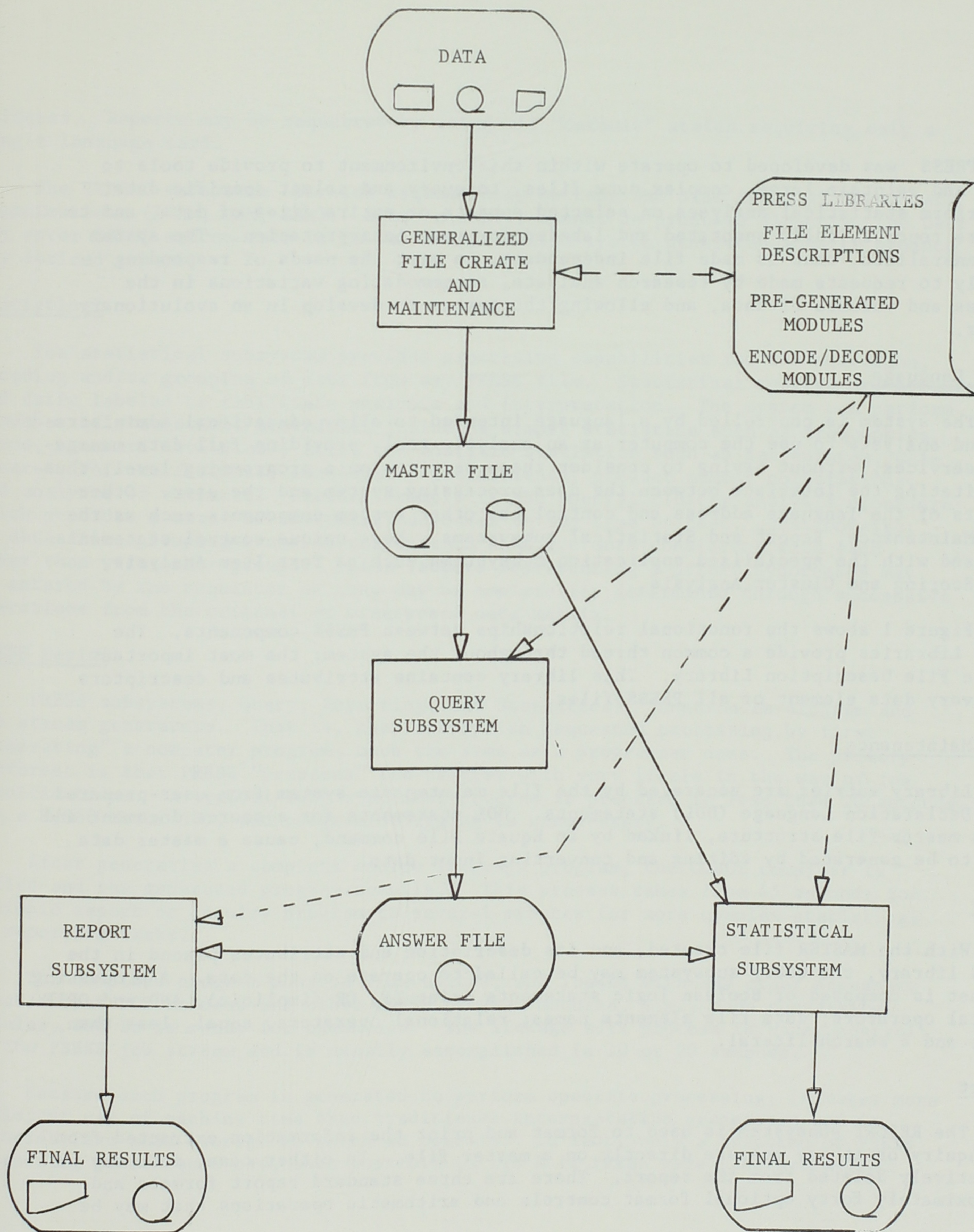


Figure 1. Functional Relationships between PRESS Components



## PRESS

PRESS was developed to operate within this environment to provide tools to build and maintain large, complex data files, to query and select specific data, to perform statistical analyses on selected subsets or entire files of data, and to prepare reports, fully annotated and labeled for easy interpretation. The system was generalized, that is made file independent, to meet the needs of responding rapidly to requests made by research analysts, accommodating variations in the classes and volumes of data, and allowing the system to develop in an evolutionary manner.

### PRESS Language

The system is controlled by a language intended to allow educational administrators and analysts to use the computer as an analytic tool, providing full data management services, without having to consider these services on a programming level, thus facilitating the interface between the data processing system and the user. Other subsets of the language address and control the other system components such as the File Maintenance, Report and Statistical subsystems. More unique control statements are used with the specialized application subsystems such as Test Item Analysis, Test Scoring and Cluster Analysis.

Figure 1 shows the functional relationships between PRESS components. The PRESS Libraries provide a common thread throughout the system; the most important is the File Description Library. This library contains attributes and descriptors for every data element of all PRESS files.

### File Maintenance

Library entries are generated by the file maintenance system from user-prepared Data Declaration Language (DDL) statements. DDL statements for a source document and for a master file structure, linked by an Equate File command, cause a master data file to be generated by editing and converting input data.

### Query

With the MASTER file created, and its description and attributes placed in the PRESS library, the Query subsystem may be called to operate on the data. A processing request is composed of Boolean logic statements using IF, OR (implicit), AND and ORIF logical operators; data file elements names; relational operators, equal, less than, etc.; and a search literal.

### Report

The REPORT subsystem is used to format and print the information extracted from an inquiry or it may operate directly on a master file. In either case, data may be selectively deleted from the report. There are three standard report formats and approximately forty optional format controls and arithmetic operations that may be



selected. Reports may be requested by using all "default" states requiring only a single language card.

The REPORT subsystem operates sequentially on tape and disk files with any data organizations (ISAM, DAM, SAM). Where a report cannot be produced directly, the user may enter COBOL source code to be concatenated with system generated code to produce any desired report.

### Statistical

The statistical subsystem provides processing capabilities for the selection, recoding and/or grouping of data from any PRESS file. Statistical reports are produced and fully labeled to facilitate analysis and interpretation. The system can perform a number of statistical procedures including simple statistics such as frequencies, means, standard deviations, etc., and analytic statistics such as percentages, Chi-squares, Phi-coefficients, contingency coefficients, product moment correlations, and analyses of variance. Another example is the special cluster analysis procedure which provides a means of analyzing responses to any type of test, questionnaire, or data file, grouping items or respondents that are more consistent with each other than with other groups. Trial vectors representing a priori hypotheses may be entered by the requestor or they may be empirically determined through successive iterations from the original or transposed data matrix.

### PRESS Design

PRESS subsystems, Query, Reporting, and Statistical, function as program and job stream generators. That is, they accomplish requested processing by first "generating" a computer program, much the same as a programmer does. The primary difference is that PRESS "prepares" the program with very little in the way of job specifications. A typical 2000 statement program is prepared in less than 20 seconds, (on a S/360 Model 50), and program debugging is unnecessary.

After generating a complete source language program, the COBOL compiler is called and the generated program compiled. This process takes from 45 seconds for a simple report or inquiry program to several minutes for more complex statistical or reporting tasks.

The compiled program must be link edited, and loaded with any other necessary input/output DOS modules and other PRESS program modules, e.g., code conversion modules, and it is ready for execution. The linkage edit process is under control of the PRESS job stream and is usually accomplished in 10 or 20 seconds.

Because each program is generated to perform specific processing, it makes more efficient use of machine time than traditional interpretative processors and it requires less main storage in which to operate. In fact, only a fraction of PRESS processing power would have been possible in 128 K if PRESS were interpretative.



The overhead inherent in the program generation technique need be paid but once for recurring processing requirements. PRESS will catalog the generated program in the DOS core image library from where it can be easily recalled.

The same program and job stream generation technique is employed to accomplish data input editing and output decoding, except that an assembler language program is generated and subsequently cataloged in the DOS relocatable library for use by PRESS subsystems.

#### Computer Hardware

The minimum configuration under which PRESS can operate is a standard IBM System/360 computer with 128 K memory, two magnetic tapes, and two disk drives. PRESS operates under control of the Disk Operating System (DOS) unmodified, in the background partition if a multi-programmed supervisor is used. The system provides generalized programs for extensive use of the IBM 1231 Document Reader in a foreground partition.

#### Evaluation For Planning

As has been seen, PRESS is similar to other generalized information retrieval systems with the major exceptions that provision has been made for performing more extensive statistical analyses needed for research and evaluation and more applications unique to education. How the system is being applied in evaluation and planning in Puerto Rico can be illustrated by a typical problem. For brevity, the problem has been arbitrarily restricted to a portion of the process and to a small number of factors contained in the 1966-67 data base.

Within the Puerto Rico school system, there were two types of pre-school programs, a regular kindergarten which operated a half-day for a full school year, and a "headstart" program which operated for eight weeks during the summer preceding entry into first grade. By default, there was a third, more common condition where neither program was available to pre-school children. These conditions posed a number of questions for educational planners, for example, such as the following:

"Does the "headstart" program really have any effect on achievement in the first grade?"

"Does "headstart" produce the same result as regular kindergarten?"

"Does not attending kindergarten or "headstart" affect achievement beyond the first grade?"

In preparing analyses which addressed the above questions, it was necessary to consider another condition which existed in the school system at the same time. In first and subsequent grades, children might attend a school with



double, interlocking or regular enrollment. Altogether, there were four programs which had the net effect that children might attend school 3, 4, 5, or 6 hours per day. In comparing the effects of pre-school experience on achievement in the first grade, the type of enrollment obviously would have to be considered since the total hours of school per day (or per year) would be expected to have as much, if not more, effect on achievement as pre-school experience. Or said another way, unless the type of enrollment was taken into account, any differences found in achievement between types of pre-school programs could be due to disproportionate numbers of children in the various first grade programs, among other things.

In fact, it was known that other factors affected achievement. More specifically, urban children score higher on the available achievement tests than do rural children. Also, the lower the socio-economic status of pupils, the lower the achievement scores would be. In order to make more useful interpretation of the analyses, it was necessary to consider these factors. It was possible, also, that same program would work better with urban rather than rural children, with poorer rather than more well-off children, and so on.

This problem description is intended to point out that reasonably complicated analyses may be required to make useful interpretation of the results and to determine the effects of planned programs. Knowledge of effects, of course, would allow more effective planning. By use of PRESS, such analyses can be specified and executed in a relatively short time as a first step in the formulation of new policies or plans.

For the problem described, two types of information were considered useful, a distribution of the average reading achievement scores within the stratification implied by the preceding discussion, and a statistical index to indicate whether or not the differences which the analyses might show would be due to chance. Although there is some choice about the technique to be used to obtain the latter information, only the first type is illustrated here.

Two PRESS queries were used to formulate the analyses. While all data were available with the first, two different report formats made interpretation easier. Each query identified the grade levels to be selected and specified the names and values of the fields to be used in establishing the strata. Special labels were included to replace standard labels and improve the readability of the reports. In this problem, the queries required 18 statements, including instructions for special grouping or values and for labeling.

The first query produced the report formatted and labeled. The table showed the number of cases, the averages, and the standard deviation for the three pre-school conditions by the four types of enrollment for first grade for both urban and rural children, ignoring socio-economic status. Other pages of the report showed the same page breakdown as this for second, third, and all grades combined; for urban, rural, and total; and for the various levels of socio-economic status.

This information allowed the example questions to be partially answered--children who attend headstart programs on the average earned higher achievement scores in the first grade than children who did not; children who attended regular kindergarten,



however, earned higher achievement scores on the average than either of the other two. It also shows there are more complex relations between type of enrollment and pre-school program which need to be considered in planning program changes. Another report page from the second query, showed that the difference that existed at the first grade in achievement test scores, as related to the pre-school programs, persisted at least until the third grade. Statistical tests indicated that differences were statistically significant.

#### Summary

This description of the PRESS system and its application to a typical educational problem in Puerto Rico shows that educational analysts could easily test other hypotheses about these or other variables through the use of the system. As easily, similar processing could be carried out to analyze program costs, availability of teaching skills, and other data as required to program evaluation and planning. It is through the use of the system for evaluation of regular and special educational programs initiated by U.S. Office of Education funds that the Department of Education expects to identify those programs which produce the best educational effects to improve the public education system with the available resources. The evaluation effort is just now beginning but is already providing useful information to Department officials.



## INTEGRATED INFORMATION SYSTEMS

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### Introduction

Although it is customary to open a talk with the definition of the subject, I find that it is easier to define what it is not. "Integrated" implies an entity, a whole whose parts work together and serve a common purpose. An integrated system is one that is NOT disintegrated. Disintegration brings to mind fragmentation, a hodgepodge or perhaps an object, device or system that was once whole and is now in useless fragments. As for example, an egg which has just fallen off a wall.

I am sure that we all recall the "Humpty-Dumpty" nursery rhyme in which Humpty at one time was whole and could serve a useful purpose (not necessarily by sitting on the wall), but something happened to cause Humpty Dumpty to fall and become disintegrated. This is somewhat similar to the position that the typical education information system now finds itself. As you recall, the nursery rhyme went on to suggest a solution, or at least an attempted solution that involved getting all the king's men and all the king's horses together in an attempt to re-integrate, if you will, Mr. Dumpty. It may be stretching a point, but in most states, the king could be construed to be the governor and I'm sure that most progressive governors would like to see things reintegrated. So at his call, the king's men, who undoubtedly included some cooks and chefs, were summoned. After all, who knows more about eggs than cooks or chefs? And in their wonderment, while the horses were pawing the dust, it became apparent that with the capabilities at hand, involving the cooks and the chefs and the horses with all their beautiful muscle power, frustration ruled the day. If it could have been done by force or the people available, the job of reintegrating Mr. Dumpty would have taken place and we probably would have never heard of the nursery rhyme. The project failed, not for lack of muscle, not for lack of people that knew what use to make of eggs, but because the king had no one in his employ who had some structural knowledge of egg shells and fluids, even if they knew nothing about cooking eggs. We shall leave the moral of this homely analogy for the moment and discuss the more basic causes of the current situation of disintegrated educational education systems.

The inability to relate information to its parts is not confined to the public schools. In fact, the non-public schools with their costs rising at a greater rate than tuition and with enrollment declining, find that they have very little knowledge of the costs, not only of the various programs, but even of the attendance centers themselves. Drastic measures may have to be taken in a very short period of time on a very skimpy information base. The non-public schools face a crisis far greater relative to their resources than the public schools with their more ready access to financial support.

The problem of non-integrated information systems in their present state is not confined to education. Banks and insurance companies, who are among the oldest



EDP users, now find that in order to compete, to meet the needs of service for the customers, and to maintain their economic viability they must go to what they call common information files. The individual, and not the demand-deposit accounting system, the time-deposit system, installment loan, mortgage loan and all the other separate entities of financial institutions, is the keystone. The competition is not only between banks, but between banks and savings and loan institutions. Savings and loan institutions have made tremendous strides recently in providing integrated information system on-line to their clients. Perhaps because of their rather singular purpose (as opposed to our "full service banks") they have had an opportunity to concentrate their efforts and to be able to integrate their operations through EDP more successfully.

#### Educational Management Perspectives

To talk about needs and types of integrated information systems before considering the end result or purpose of an information system would be putting the cart before the horse. It should also be evident that the adequacy of an information system is dependent on the purpose it is to serve. Perhaps the best example of an integrated information system is found in one-man businesses.

Some time ago, before Sputnik, perhaps even before World War II, certainly before federal programs concerned about categorical aids, educational information systems were, for all intents and purposes, integrated. Like Humpty-Dumpty before his fall, they were whole and presumably could serve a useful purpose. When the state educational agencies were concerned primarily about pupil statistics, attendance and whether the teacher was qualified or not, and when state aid was based on rather simple criteria, the requirements demanded of the information system were minimal. In addition, the role of the county superintendent as the "arm of the state" was extremely important in maintaining a close liaison with the school districts themselves. As long as the research statistician could manually add and report to the legislature various data concerning pupil attendance for state aid and other statistical purposes, compile lists of districts and other such tasks, reporting was a very simple problem. By and large, it must be admitted that even though the "system," if you will, looks crude by today's standards, it probably came closer to serving its purpose than even the most sophisticated computer information system currently in use satisfies the current requirements for a state-level information system.

Over the years, the staff was enlarged in most departments of education and it became necessary to further separate responsibilities. The schools became more consolidated, the role of the county superintendent diminished, except for very legalistic requirements. The reporting systems, based on the requirements of these separate responsibilities were at the level where, although perhaps inconvenient, using forms that were poorly designed and the maximum use of information to be collated was not available, a reasonable acceptance of the information system prevailed.

Before we dwell too long in the simpler days of yesteryear, we might look at the current situation in which there were literally hundreds of people in an



average state department of 5-10 divisions, whose responsibilities for collecting and reporting information have been complicated by each session of the legislature and recently by each session of the U.S. Congress. In addition, it has become apparent that additional evaluation of the educational system need commence. The list of curriculum subjects required to provide an education by today's standards is considerably more extensive than it was in the last generation. A larger number of elements must be considered for certification if the profession is to advance and, of course, with the wealth of sources for financial aid, (each of which requires its own reporting and information system), the amount of data and the ability to cross-reference and integrate data, have created a revolution in the concepts of education information systems. If that were not enough, we are now becoming concerned about objectives, the ability to relate and evaluate performance on an input/output basis and are currently considering such management techniques as PPBES to help educators in their management role to be more responsive to the citizens, to the profession, and to the students themselves.

The discussion thus far has been oriented to the state department of education level, as if that were the only problem involved in the information reporting system. By and large, many of the state departments of education have simply passed their problems on to the superintendents. At least in one state, the experience in a recent year was unique in that this is the first time in memory when there was a shortage of applicants for the district superintendent's position. Part of the reason, but by no means the entire reason, was that the role of the superintendent had diminished from that of an educational leader to primarily that of a paper shuffler.

The ideal information system, of course, is that involved in a one-man business in that less information needs to be recorded and those records can be accessed and coordinated with no problem. Let us take a look at the typical department of education organization at this particular time. The management information system, be it integrated or not, must serve a large number of people. With 5 to 10 divisions or thereabouts, we can find several division chiefs nearing retirement who typically are less interested in long-range plans. The commissioner of education is probably progressive, but he is unlikely to be aware of the total information flow through his department, or to have a realization of the degree of difficulty and costs associated with developing an adequate computer based information system. In addition, there is a well recognized shortage of qualified information management systems people.

The necessity for the active participation of many department personnel to help specify their requirements, the necessary subsequent liaison, the unaccustomed level of future planning required and the problem of dual operation with existing applications create an aggregate problem that greatly slows the progress in implementing an integrated education information system.

#### Survey of EDP Applications

Now that we have outlined the development of the management uses and requirements of an information system, let's retrace our steps from an information system viewpoint and the use of EDP in particular.



Some of the first uses for EDP equipment were, of course, punch card systems and even the first generation of computers applications were primarily free-standing or non-integrated. If you wanted to collect, summarize and tabulate pupil information, you punched up a card, one per district, grade or whatever the breakdown was, with the number of boys and girls or what other division you required; then tabulated, summarized, and reported it. If you wanted to know how many teachers in a particular school system, you simply designed another special form, recorded, tabulated, summarized and reported it. If one determined that a need existed for the knowledge of the pupil/teacher ratio, he simply designed another form, asked for the specific information, did the necessary multiplication and division and reported it. These techniques certainly improved the manual statistical compilations that were being performed, and as the entry costs into such a system were nominal, the application could easily be justified on even a one or two year basis.

One application might ask for the number of math teachers, another might require a different breakdown by subjects within the field of mathematics and as each application was designed and implemented pretty much without regard for others, there was little opportunity to use the information from one file to cross-reference or associate with information in the second application file. It became apparent, therefore, that a significant improvement could be made if the applications all used standard coding schemes so that the math as a subject area would appear as a uniform code structure in all the particular applications, whether it was a survey designed by the math consultant or a regular report of the teachers' qualifications. This second level or generation application technique greatly improved the chances that currently available information could be collated and therefore, no particular requirement to collect the same information again would exist. The second generation used primarily serial or tape processors. Even when disks were used, at least one common vendor equipment was used essentially in a serial mode. This sometimes required a considerable amount of sorting but, in general, the applications could be run fairly efficiently and there was capability to cross-reference files and to code them to make meaningful associations.

The applications oriented systems operated quite successfully and most states are making some meaningful progress along this path at the present time. The separate responsibilities of the enlarged staff require that information be provided to meet these requirements. As long as people in education management feel willing to accept the pigeon-holed information unrelated to an educational activity, the applications oriented systems will be around. This is not necessarily all bad; for example, it's difficult to imagine a school lunch application required to be oriented to individual pupils since the role in the school lunch application is somewhat different from instructional programs or facilities. Applications oriented systems have the lowest start-up costs and the most immediate impact, and will continue to serve many useful purposes.

Second generation applications where the various files have been consolidated from the requisite applications, but have some provision for standardized coding, serve many useful purposes. For many states, this may be sufficient. Availability of accurate information for the various divisions of a state department



to more adequately respond to their separate responsibilities is certainly an improvement. In addition, limited summary information is customarily rapidly available that requires a wide-spread dissemination and correlation with other basic data.

With the advent of larger files and the availability of hardware and software that reduced costs of true random processing, the third generation has arrived. With the capability of updating indexes on-line for cross-referencing purposes, it is no longer required that individual records be physically stored in a particular pre-determined sequence. It is also easier to visualize the capability of economically reconstructing the quantitative information that each teacher may have available at her finger-tips to reconstruct the classroom environment without pre-storing the information in that sequence.

The third generation type of system as represented by the MSEIP Design has not yet been successfully installed, although a number of projects, including the MSEIP, are going ahead with detailed design and in some regional centers, initiating implementation of similar techniques. The abilities of such a system for education evaluation and research are almost unlimited. Its capability to respond to questions unspoken at the time of design looks extremely promising. In the years to come, considerable progress will be made regarding this technique.

#### Some Guidelines For Implementing An Integrated Information System

As every organization has an information system currently in existence, whether it is called that or not, it is important to recognize the transformation to the more integrated system that will be required. I think we are all aware that no single person, no group of people can do it alone, but that it requires a coordinated effort in order to proceed with the on-going process of integrating an information system. To that end, perhaps some guidelines may be useful.

##### 1. A Plan

The first and foremost point is to develop an in-depth plan that includes a survey of the existing information system; an outline of the requirements; and some time scale that indicates costs, personnel requirements, and necessary financial support to accomplish this plan. The natural evolution of an information system is not toward integration. Without a plan to modify this trend, an information system will tend to become more disintegrated and increasingly difficult to pull back together. The process of planning itself is not an inherent and natural tendency. Considerable effort, that may appear to some as being wasted when effective work could be done, is necessary in this planning. It is assumed in the planning process that plans are never static. I am sure we are all aware of the external forces of change in the educational environment that dictate the information system requirements that must reflect these changes. A plan must be inherently flexible and continuously updated as additional information is known and as requirements expand or drop off. In essence, the system to be developed from this plan evolves, and is not static.

Education systems, though very similar to other systems, always, and I emphasize ALWAYS, have some local environmental problems that are specific to a single district,



to a single region, and to a single state. One man's plan may not be adequate, useful or desirable for another man's operation. Certainly the principle, elements, and level of detail can be lifted from like-organizations or places; however, the plan itself must represent YOUR best estimate on how YOU want to proceed to solve YOUR particular problem with YOUR particular personnel and resources.

## 2. Centralized Data Pool

We must insist that there be a focal point for forms to be designed or re-designed, file design and someone to research requirements of new applications to determine if all or part of the information is currently available.

An integrated system, once installed, will not remain integrated unless someone has the responsibility and authority to insist that homogeneous code structures, data item definitions, period of collection and mode of collection remain in some semblance to a unified program and plan. This is not to say that the individual or group responsible for maintaining cognizance of the over-all information system contents should also have the authority to dictate to the user what he should do. He should merely advise him of the alternatives and point out the costs and effects of the requested information versus the recommended alternative.

## 3. Qualified EDP System Personnel

In the real world, it is next to impossible to have a highly qualified and experienced educational administrator who also has the requisite programming systems and operational experience in the educational field. The question then becomes "how does one staff an organization from the existing professional labor pool?" Does one pick educators with a smattering of EDP or EDP people with a smattering of educational background, and at what levels of effectiveness?" One always feels more comfortable with individuals that can speak the particular jargon involved in his particular specialized training. However, it is not necessarily mandatory nor even desirable, in some cases, that the director, the senior staff man, have more than a tangential previous involvement with educational data processing if this individual has a solid background in other business application work with the same relative size system as is contemplated and a continued interest in his profession, namely the EDP profession.

To put this in perspective, one should recall that in the early days of computer activity, most people insisted on engineers or mathematic majors to do the programming because obviously they knew the innards of the machine, were likely to be logical, and could relate to the equipment. Later on, as some of the businesses installed equipment, this activity customarily fell into the accounting department and we then had accountants heading up the operation because after all, most of the applications were financial and who knows a debit from a credit better than an accountant? It then became apparent that it might be easier to teach someone with a depth of EDP experience the difference between a debit and a credit than it was to teach an accountant the requisite EDP capabilities. Nowadays, you rarely hear the argument that one must be an engineer to be a programmer or that one must be an accountant to work on accounts receivable systems.



One further caution; I've not seen this occur in the educational information systems field, but it has tended to occur in other areas of computer activity. That is if the man on top (who now has access and some control of the information) is of the same professional fraternity as the user, a problem arises. Some data processing directors have a tendency to tell the users how to run the show. If you have a banking background and are associated with computers, there is a slight tendency to tell the banker how to run his banking business. This does not occur if the individual readily recognizes that his primary role is to provide an information service and not to make management decisions based on the use of the information.

#### 4. Pre-programmed Packages

The increasing availability of practicable pre-programmed packages must be investigated in order to insure that those activities that have already been accomplished in a generalized sense need not be re-inserted in every particular application or report program. We feel that now and in the future, the EDP manager will have to exercise more discretion and to evaluate alternatives being presented to a greater degree than he has felt required to do in the past. This is primarily for two reasons. As the industry matures, better generalized programs and systems will be available and secondly, with the recent announcement of IBM's new practice of charging for some services and programming, the hardware vendor supplier will tend to cause the EDP manager to make managerial decisions that he has not made in the past.

#### 5. Maintain Liaison with Professional Educational Organizations

I hardly need sell this group on this point, as your participation today is an indication of your interest and concern of the requirements not only of cooperative effort, but of liaison with your counterparts in other similar EDP operations. We must continue to promote cross-fertilization of ideas and to minimize the occurrence of re-inventing the wheel. To the extent that we can associate with people with similar problems as we're doing today, visit other installations, acquire or even promote the utilization of persons in our own individual installations that have experience from other educational information activities, we all benefit. We can minimize the cost and reduce the lead time in developing viable information systems. Out-of-town travel money is hard to come by, but in this field, will pay dividends.

#### 6. Structural Requirements

A large part of the information presently incorporated in education information systems is required because the organization structure says it's required. Examples of this type of information requirement generate from legislation, Office of Education, state board rules and regulations and administrative decrees. In some of these cases, such as the state board rules and regulations and that legislation that we all know originates in the Department of Education anyway, some attempt should be made to investigate the administrative ramifications of draft legislation, rules and regulations, before the effective dates rather than to realize after something has been enacted that it will create additional demands and unnecessary effort



in the information system input/update retrieval. It's much easier to do a little pre-planning and make recommendations in advance than to have to live with legislation, rules, etc., that perhaps unnecessarily complicate the information system problem.

Everyone is for economy in government - legislators, civil service personnel, education personnel and of course, the tax payers. However, some of the major inefficiencies in administration and management which, of course, gets reflected back into the information system is concocted in the ignorance of the impact of such rules and regulations on the administrative procedures of the implementing organization.

An example comes to mind in the transportation aid formulas of two adjacent states fairly similar in population distribution, costs of operating school bus systems, geography, etc. One state has a flat rate with the 3-step formula based on distance the pupils live from school. The other state has a cost reimbursement formula which requires several dozen forms in such minute detail that it is impractical to even collect the information on that basis, yet it is all duly reported, cost footed, sub-totaled and verified. The state with the cost sharing or cost reimbursement formula has three or four people working frantically, trying to keep up with the paper work. The state with the flat rate has one individual that works a month or two a year, processing basically the same state aid for the same purpose. Any capability that educational organizational personnel have in heading off ballooning administrative costs, should be scrutinized and such capability, all other things being equal, should be applied.

#### Summary

We should all recognize that decisions are only as good as the validity of the available information on which to base such decisions. Decisions based on available, but invalid information, are probably worse than decisions based on no information at all.

The progress to date in implementing integrated information systems has been probably less than desired. In the implementation of integrated educational information systems, however, this group and other progressive groups and professional associations, are attempting to be more responsive, in an information sense, to educational management and administrators.

Just in case anyone has missed the point that integration of information systems is an "all or nothing" thing, let me re-emphasize that integration is a relative term, probably as relative as a supposedly absolute term, like the word "total" commonly associated with information systems. The degree of integration in a given educational information system should be based on the requirements of that organization and not some theoretical ideal or based on someone else's requirements. Needless to say, no one will be able to anticipate all the various associations of information needed in the future, so we must now do our best to design flexible integrated information systems to minimize the re-work required.



## MSEIP PROGRAM-ORIENTED BUDGETING AND ACCOUNTING IN LEA'S

Donald F. Klassy  
Project Director  
Hopkins Public School District 274 (Minnesota)

This presentation is of a Program-Oriented Budgeting and Accounting System for all Minnesota School Districts. This correctly implies that this project will conceptualize and implement a system that can be utilized as a manual or a data processing system. Although the discussion of the system outlines the maximum capabilities which a computer application would supply, the system will also allow smaller schools to utilize it to the degree that will fit their own school districts.

It should be kept in mind that a significant part of this project will consist of developing a user manual and in-service training for the participating school districts. Consequently, we believe that the design of the system will allow the district to tailor the budgeting and accounting to its specific needs and at the same time adhere to the state's reporting requirements.

Outlined below are long-range objectives of this state department of education directed and supported Program-Oriented Budgeting and Accounting System. A time schedule for implementation of these objectives was established, beginning in December 1968 and concluding July 1, 1971, with all districts converted to the new system.

### Long-Range Objectives:

1. Develop a uniform coding structure which will fulfill both budgeting and accounting needs of all school districts in Minnesota. The structure must be simple enough to be easily communicated, and implementation practical from a maintenance standpoint.
2. Conceptualize report formats for budgeting, accounting, cost analysis, and administrative decision making by local school districts. To accomplish this objective there must be active involvement by the different interest groups in school organizations (i.e., board of education, superintendent, directors, principals and SEA personnel).
3. Fulfill reporting requirements of state and federal agencies. This would include a formal letter of consent by a state department of education that the system, with its reporting criteria and coding structure, would be acceptable and incorporated within the new state manual of instructions.
4. Satisfy present and anticipated statutes governing school districts in Minnesota.
5. Maintain awareness of other similar efforts being made in the country (i.e., Research Corporation of ASBO, Handbook II, Nebraska, Iowa, etc.).



6. Effectively communicate the financial system to users:
  - a. Prepare a users manual to assist with in-service training efforts. This manual will precede a new state accounting manual to be informative to various interest groups.
  - b. Draft a new state accounting manual. Manual will include guidelines followed when district is using manual or semi-automated methods and when district is using EDP methods.
7. TIES project and any other joint data processing efforts must interface with the system designed and agreed upon.
8. Evaluate the objectives on a continual basis.

What are the effects of decentralized budgeting on a local district organization?

- . Districts with approximately 10,000 students will need an estimated 1,600 expenditure accounts if quite decentralized.
- . Increase in workload will result in about one additional person needed in the business office. (Also, result in additional work for department personnel, principals, and central office administrators; however, probably can be accomplished without adding personnel.)
- . Decentralizing budgeting, and placement of authority and responsibility must be coordinated to result in acceptable degree of success.
- . Face-to-face communication is very important in the budget review process.
- . Administrative flexibility must be provided in the system for performing the budget control function.

The philosophy adhered to in this system is that the budget is a plan of financial measurement against actual experiences. Consequently, the system must report when the actual is "getting out of line." Rather than applying expenditures to an area where there are still budgeted funds, we would either transfer budgeted appropriations or be aware (through the reporting system) whether a budget overage in any one area jeopardizes our over-all plan.

#### Highlights of the System

The System Is Designed to Accommodate:

- . All sizes of schools
- . Manual or data processing system
- . Single or double entry
- . Cash or accrual
- . Centralized or decentralized budgeting



The System Will:

- . Budget expenditures and receipts for a three-year period
- . Prepare budgeting and processing reports for financial and administrative control
- . Account in the expenditure, revenue and inventory areas

Expenditure Accounting:

- . Flexible coding structure
- . Flexible budgeting levels
- . Flexible reporting system

Coding Structure Allows you:

- . To develop and report against functional budgeting areas that fit your school district
- . To budget and report against non-district financed aid programs
- . To report to the state as a by-product of the system
- . To accumulate and report financial activity that crosses budgets or is a portion of a budget

Expenditure Budgeting System

Prepares Budget Worksheets that Report:

- . Last year's actual expenditures
- . This year's year-to-date expenditures
- . This year's budget
- . Next year's preliminary budget

Budgeting System

Accommodates:

- . Program changes at the departmental level
- . Administrative changes at the district level
- . Allows:
  - Firming-up of next year's budget and preparation of a second year (levy) budget simultaneously

Expenditure Output Reports Are Prepared to Give:

- . Budget related reports for school board and administrative budget decision making
- . Operating reports which consider encumbrances as well as actual expenditures against the budgeting plan



Examples of the types of expenditure budgeting and accounting information available are:

- 1) a summary report of all departments
- 2) an expenditure guideline report by organizational unit
- 3) an expenditure, encumbrance warning report
- 4) a school board revenue budget report
- 5) a monthly source of revenue report by fund

#### Coding Structure Rationale

Whereas it is conceivable to develop a coding structure which would output information in unlimited variations, our objectives have been to develop a system which would be amendable to the practical demands of running a school district.

Consequently, the following considerations have had to be fulfilled:

- . The system must lend itself to budgeting at a level of responsibility that is no higher than departmental.
- . The coding structure should be broad enough to encompass the required dimensions to run the district and simple enough to insure proper coding.
- . A technique was developed which would allow additional slices of information to be derived on a pre-planned basis.
- . The system must emit the reports necessary to derive financial data and management information which would satisfy all sizes of school districts.
- . The system must be modularized to be usable as both a manual and data processing system.

With these criteria in mind, we have developed an expenditure coding structure which requires actual coding of three fields at all times, a fourth field if the expenditure is partially or fully reimbursable from non-district sources and a fifth field if special activity information is required. Because the above configuration of data produces mutually exclusive fields, the Fund and Area of Responsibility for each valid combination is inputted only one time, when each new budget line item is inputted.

1. Organization Unit - a three-digit code that identifies the particular level that its accompanying department is involved in. For example: if the department is district-wide (Superintendent's Office), the organizational unit would be "all schools"; if the department involved only the elementary schools, but not one school in particular (elementary director), the organizational units would be "all elementary schools"; if the department could be localized to one particular building (art, social science, etc.), the organizational unit would be the particular building involved.



2. Departmental Unit - a three-digit code which identifies the area under a single administrative head, created to fulfill certain instructional or supporting service responsibilities. Example: Instructional Classroom Teaching - foreign language department, math department, etc., General Control - superintendent's office, business affairs office, etc.
3. Object - a three-digit code identifying budgeted line items (salaries, supplies, etc.).

These three areas comprise all the valid combination of budgetable items that make up the school district's total operating budget.

4. Source/Project - in order to accommodate those expenditures made through financed aid programs, the three-digit field has been established which must be coded only if these types of funds are being expended. Consequently, there would be a separate budget prepared for each department involved in a financed aid program, besides that department's budget which involves monies from district sources. As an example, the coding structure would be as follows for an expenditure for text books for home economics at the high school from a vocational education aid fund.

Organizational Unit - three-digit code for the high school involved.

Departmental Unit - three-digit code for home economics.

Object - three-digit code for text books.

Source - three-digit code for VEA.

Twelve digits TOTAL.

Consequently, a master table of a finite number of budgeted items will be compiled. This will consist of the twelve digits enumerated above.

When this has been compiled, each master item will be mutually exclusive and we can, therefore, add the "fund" and "area of responsibility" that accompanies each master item.

For example: "towels, locks and uniforms" for the athletic department at North Junior High would be coded as follows:

Organizational Unit - three-digit code for North Junior High School.

Departments - three-digit code for Athletic Department.

Object - three-digit code for towels, locks and uniforms.

Source (not coded since no financial aid funds used)

Fund - master record indicates



Area of Responsibility - master record indicates codes.

(For uniformity within a state, the last two codes should be assigned by the state.)

5. Activity Code - one additional area of information will be made available to the system on demand through an activity code. This is a three-digit code that will take the data that accompanies it and put it in a separate file for analysis and reporting per the definition of the requester.

Example 1: The Instruction Coordinator is responsible for curriculum development and he would like to have a breakdown of expenditures for curriculum development in social studies, math and science. He would be assigned three numbers which would represent the three departments involved, and all related expenditures would be coded with their respective activity code. When the transactions are processed, this information would be put on a separate activity file besides being processed through the normal routines. Subsequently, the desired report would be printed as requested.

Example 2: The district superintendent wants to know the total spent for snow removal through contract services as compared to custodial services. All snow removal expenditures through contract services would be coded with an activity code while custodial snow removal would be coded with another activity code.

In summary, the following code areas are inherent within the system.

A	B	C	D	E	F	G
Organiza- tional Unit	Depart- ment	Object	Source	Fund	Area of Resp.	Activity
xxx	xxx	xxx	xxx	xx	xxx	xxx
Develops table of master file valid transactions and budget items				On Master Record		Special information code



## SEA CONTINUATION

Ralph Van Dusseldorp  
Associate Professor of Education  
University of Iowa

When I am to give a talk such as this, I usually procrastinate, and do not prepare until the last minute. But this time I prepared on Tuesday by writing notes to use today. Then after spending yesterday at this conference, listening to the presentations and talking with the attendees from the 13 states, I spent part of yesterday evening changing my notes. Before the session yesterday, I thought there was a real danger that the MSEIP System would never be implemented. I was going to compare the shape we are in now with where we were in 1958; compare the development of this Project with the development of the handbooks which were not implemented until there were funds for implementation from Title X. I was afraid the same thing would happen to this Project. However, the speeches and reports yesterday have convinced me that this will not happen.

We have learned a great deal from this Project, at least I have. The title for my talk today is "SEA Continuation" - what happens now? How should state education agencies go about using and implementing the MSEIP System? Let me make some observations - I would call them facts, but you know better. I shall merely call them observations concerning the present and the future.

First and perhaps most important, we must have the support and involvement of the administrators and users of our information. Probably the most important thing MSEIP has done has been to involve the administrators and users at all levels throughout the Project. Many of the people here today have served on Project committees from the beginning. This involvement has made them more knowledgeable. We must continue this support and involvement between states and within states; meetings should continue to be held.

We in data processing have learned that we are servants of our users. We had been guilty of developing information for our own sakes or for the sake of information itself. We have learned to communicate, to give and take, and find we are really quite alike. We realize we do need information systems, not just operations. We have called it a total information system, an integrated information system and now a management information system; but whatever name we choose, it involves the same principles and processes, with the same goals and we recognize the need for it.

The system we have developed, we have done ourselves. It was not handed to us by the manufacturers, consulting firms or the USOE. We now have the framework we need; we have involved the users and we have built in flexibility. We have something we can implement. We cannot go too far wrong if we use the data items, codes and definitions we have developed.

But now what? The Central Staff will furnish leadership for one year; the ARIES Corporation will furnish the program specifications; but it is up to the states to do the implementing. This will involve effort and money.



I am not so naive as to think that all 13 states will implement the entire system quickly. Too many factors are involved to expect speedy implementation; the cost, the needed personnel, the adapting to special needs of states, and the changeover of current systems. As you look now at the job ahead, you have some alternatives: 1) do nothing - forget it; 2) implement the whole system at once; or 3) implement a piece, a subsystem, at a time. The first is the easiest; the second, is impossible. The best is to implement a piece at a time. This requires a planned approach set up with timetables incorporating the whole system. The parts easiest to do first may be the new ones, the ones that are not now a part of your state's information system.

There are some things we can do to make the task of implementation easier. We can continue to work together, to communicate and borrow from each other. We can pool our resources. No state is in a position to pay the whole cost, but even a \$5,000 contribution from each of 13 states would bring a total of \$65,000 for development of common needs. We can work with committee members in individual states and thereby pool our expertise and experience. We can investigate the further use of Title V funds and band together to seek additional grants. And we must not work in isolation. We should communicate with other projects and systems to exchange information and techniques that can be mutually beneficial.

As we proceed with implementation it is important that we concentrate on information not for operations but for planning and decision making. The three levels of information SEA's need are for planning and decision making, control, and operations. But the real payoff will come when we can provide the information for the top level, for the decision makers. In the final analysis information should serve the guy that pays the bill.

Along with the development of information systems we need training in the use of information for decision making. However, let us be realistic in this and face the fact that not everyone wants better information, and the fact that better information does not always produce better decisions.

In closing, I want to pay tribute to some of the people that have made a contribution to the Project. Jim Mitchell yesterday said that MSEIP is a "people project" and paid tribute to a number of people involved. I would like to pay tribute to the present Central Staff as well as those that have made their contributions and have gone elsewhere.



## DIRECTOR'S REPORT

James E. Mitchell  
Project Director

In its three and one-half years of existence, the MSEIP has spent one and one-half million dollars and involved at least 145 people in more than 20,000 man hours of effort toward developing an integrated educational information system. What has it gotten us and where can this take us?

We have a model - the MSEIP System - documented and disseminated across the country. Our system includes the general concepts for an integrated information system for state education agencies with data items identified and standard definitions and codes listed.

This is a worthwhile and meaningful accomplishment - less than some had hoped for but more than many had thought possible. And we are satisfied that its significance lies in what it means, not as an end in itself, for it is not the end, but in what it makes possible for the future.

From where we now stand, the way to continued progress is clear. It is now necessary that we develop the software to demonstrate the system and establish its credibility. However much agreement there may be for the need of an integrated system, until its workability is shown the problems of implementation will be compounded by lack of confidence. As in any undertaking, the three critical factors are money, time, and personnel. The judicious use of each of these factors in the Project and in the states is especially important as we face the reduction of all of them.

As the further progress of MSEIP becomes more and more the responsibility of the participating states, there are some particular points to be made regarding what the states must do.

First, a warning. Each MSEIP state has persons on its staff that have been involved with the Project, that are familiar with it; the knowledge and experience gained by these people are assets that should be maintained, communicated and expanded for the benefit of other personnel and the implementation effort. Use these people and their talents!

The commitment of the states to integrated information systems is long-standing. But now there is needed a similar commitment to active, individual state involvement in implementing the system. Some suggestions regarding implementation come in the form of cautions. Much effort can be expended unnecessarily in revising the MSEIP System. To guard the system compatibility, tailoring should be limited to revisions needed only to serve requirements of states' specific laws. Flexibility has been built into the system to allow for additions, deletions, and updating without effect on integration or compatibility.



A positive approach to implementation is for SEA's to concentrate on output; to define their needs in terms of information objectives. It is not a case of what data do we want, but, what do we want from our data?

The involvement of states in implementation is the involvement of people. Further training of SEA personnel, both technical and administrative, is needed to broaden understanding of systems procedures and capabilities. Progress has been made in this area and others. States have begun to think in terms of long range plans, to reach out for the potential offered by such a system. But nowhere is there an operational integrated educational information system. The price in money, time and people has been too great for any state to achieve a full system. However, growth, commitment, and effort toward this goal is continuing.

The MSEIP System is not submitted as the panacea of information systems, nor does it encompass all educational areas; but it will serve as a guide for SEA's as they revise and improve their information systems. As such development occurs, the Project's goals and objectives will continue to be achieved. The original cooperative effort among educational agencies will serve as a catalyst for new and improved information systems to meet the challenges of tomorrow.



## CONFERENCE SUMMARY

James W. Colmey  
Director, Educational Research and Services  
Memphis State University

Before making some specific comments regarding important developmental ideas and presentations during this two-day conference, I want to make two general observations which seem to me to have an important bearing on the MSEIP Project during its 1969-70 year of activity. The first is related to morale and the second is related to what I will refer to as a current pressure syndrome in the data processing and information field.

During the past eight years I have had the opportunity to work with numerous developmental projects and have observed a common characteristic in each. The esprit de corps of the participants in the beginning of the Project is one of exhilaration and excitement and a zealous effort to accomplish a mission. The participants in this Project were more zealous than any that I have ever worked with in the beginning stages of the Project, during the formulation stages of the subsystem committees, when state department personnel of the thirteen participating midwestern states were meeting together and exchanging their ideas for the first time in the fall of 1965.

Almost inevitably developmental projects will reach a low level of morale in the final phases of the project when the developmental and participation aspects of the project are being focused into narrow, technical and immediate objectives where the opportunity for new ideas and inputs are at a minimum. As I have observed the participants in this conference, it is clear to me that some of the enthusiasm of the earlier meetings is now missing and I want to emphasize that enthusiasm is as critical now, if not more so, than it was in 1965. This is particularly true in this Project because the primary objective is to develop capabilities within the thirteen participating state departments that would make it possible for the general objectives of information compatibility and dissemination to continue its exhilarated development in the next decade at the operational level within each state.

The Project itself in the formal sense will be limited in its objectives for the coming year. The central thrust of MSEIP will be to have the Central Staff operate in a limited parameter. You are fortunate to have a Central Staff that has continued to relate itself to this central thrust and to take advantage of the economy related to the power of working together on a technical problem related to a common need of each of the thirteen states. Dr. Mitchell and the general staff are quite competent to deal with this problem and have a sound strategy for developing a solution.

### Pressure Syndrome

In recent years there has developed a current pressure syndrome that has affected all of society that is particularly related to the field of information and data processing. Those familiar with the problems of the field of data processing



and information can fully and easily comprehend why this syndrome has continued to develop and to threaten logical approaches to problems. The heavy demand for and availability of new information and the technical answers that are available through computerized systems, encourage everyone to sincerely desire answers immediately.

Therefore, there is a tendency to over-sell and over-simplify the systems that are in the process of development that for the most part are not fully developed or fully understood. In spite of statements that you will continue to hear regarding the simplicity and easy packages that are available for immediate application, the fact is that they are not simple. They are extremely complex and will become more complex as the needs and opportunities for information increase in their complexity.

When something is over-sold and over-simplified, the result is that there is a tendency for procurers in the field to over-buy and over-promise. This can only result in various degrees of failure. When people (especially administrators, managers, and supervisors) fail in keeping promises, the result can be resistance to all new ideas. This common result of the current pressure syndrome is the real tragedy and tends to encourage further over-selling and over-simplifying.

In recent years, educational administrators, under pressure to expedite the new complexities of staffing, have turned to contract management services. It should be clear by this time that contract management services for system development program operation and consultative services are a necessary and desirable input to educational management. However, it should be recognized that commercial services can not and will not assume responsibility for school officials. Educational administrators working with their elected and appointed government officials must provide the leadership to meet the public interest. Education will be in serious trouble if educational administrators are caught in the above mentioned syndrome and either blindly accept or blindly reject ideas, systems and services.

MSEIP: 1965-70

Ralph Van Dusseldorp has done a fine job of reviewing the activities of MSEIP. As you know, this is a five-year project and major outcomes are expected. Let's take a look at these outcomes as they exist at this time and see how powerful they are.

1. Educational statistics at the state level and the opportunity for these statistics to flow smoothly from local agencies to state agencies to federal agencies have been improved. The fine report prepared by Dr. Mitchell and the Central Staff (States' Activities Report for Fiscal Year 1969) demonstrates the significance of these improvements. The document itself, of course, does not include a review of the actual statistics but it certainly shows the increased activities in the field of educational statistics and it is reasonable to assume that these statistics have and will continue to improve with these major efforts in participating states.



2. Techniques for improving educational statistics including compatibility systems, equipment, personnel, systems, and common language are in the process of development and in various stages of adaptation in each of the thirteen states. The state reports previously mentioned and the revised MSEIP Documentation of Project Development and General System Design demonstrate that this objective has been responsibly met.
3. The third major objective of this five-year Project is dissemination. As a participant in several of the subsystem committees, it is clear to me that this Project has created a powerful tool for dissemination through the 150-200 participating state department operational personnel.

In listening to the state project reports at this conference, I have only one comment and response--congratulations! It is clear that these state conferences are working on more limited objectives than the MSEIP model included. However, each of the states was working on important problems related to the major objectives of this Project. Typically, active participants in this Project were carrying the dissemination process to its natural conclusion by obtaining planning authorization, establishing state committees, and developing in some instances regional computer centers to serve school systems. In addition, a limited number of Central Staff consultive and conference activities are and will be continuing.

#### Future Objectives

An information system is a tool related to management efforts. Too often this factor is not fully required and participants and users of an information system become so involved with the difficult and complex tasks confronting them in the development and manipulation of data that they do not always have time to develop a healthy insight into its relationship to other management as a service activity.

One of the important things that your Project has done has been to relate the information from this Project to other important projects that are not working on the development of an information system but rather are dependent upon it. MSEIP has been related to projects both state and national that are extending certain components of educational information systems for the nation. You should be pleased to know that your Project has served these other projects well and the products that you have developed have proved to be important inputs to local, state and national efforts.

There are three important government handbooks in the Office of Education handbook series that will be available to you within the next two years. Handbook II on accounting is being revised and has already had the benefit of much extended planning and development under the leadership of Quint Hill and Allan Lichtenberger. Pete Perkins spoke to you earlier in this conference about the work that Peat, Marwick, and Mitchell, Inc. are doing under contract with the Office of Education to complete this Handbook.

Handbook VI was discussed by John Putnam and Dale Chismore. This Handbook deals with the language of instructional systems and should be off the press in its final form this year.



Another important handbook, that is of particular interest to state department personnel, is Handbook VII that deals with the compatibility and language problems within the internal operation of the state departments and directly related responsibilities. It is scheduled to be completed by the end of 1970. Ivan Siebert and Yuell Harris of the Office of Education and Jim Milton of the State Department of Education in Kentucky have been assigned leadership responsibility for this Handbook.

This morning Bill Curtis gave an important address regarding the project he is directing in the development of a management design for program planning, budget and evaluation systems for the Research Corporation of the Association of School Business Officials. This project pre-supposes that information systems developed by MSEIP and other efforts throughout the country will be available as an essential tool to feed and make practical the PPBES effort in this country. Bill emphasized the importance of having each of these major efforts constantly related to the welfare of the children in America rather than to produce intriguing and fruitless efforts in isolation and abstraction. Each of you take back to your various states the unique knowledge and desire obtained as a result of your MSEIP experience. You can meet this challenge and make these activities vital by disseminating your knowledge within your own state department.

In addition to Pete Perkins' presentation, commercial interests and contributions were well-represented by Robert Hoynes of IBM and Ron Moir of the ARIES Corporation. Robert Hoynes presented material on the PRESS system developed in Puerto Rico and Ron Moir discussed some of the important packages that his Corporation has developed, including important contributions to the MSEIP.

Your two chief state school officers that addressed you earlier in this conference, Paul Johnston and Ray Page, both emphasized the pressure that chief state school officers are feeling from the public and state legislators for answers to questions that the public has not traditionally expected answered. Now they are beginning to demand answers because they are better educated and know what can be done and now expect it. Both of these chief state school officers ask you to assist in determining how to use the information that you obtain from your information system operational activities.

You have developed tools for superior collection and manipulation devices and also have identified the kinds of data that will have utility for decision-makers and should be stored in data banks. You are being challenged to develop output forms and the programs required to arrange data to fit these forms. The actual output will utilize multi-dimensional techniques and formats.

In addition to the output forms mentioned above, functional activities such as program planning, budgeting and evaluation will be demanding more and more information. Evaluation, budgeting and planning techniques that are being developed by educators today were initiated and developed forty years ago but have not been generally applied until this decade.



The proceedings mentioned earlier in my comments do not include any great emphasis on evaluation but you will be hearing more and more in this area. New evaluation concepts are being developed in a non-terminal strategy that will make this tool more currently useful to educational administrators. Your friend and former associate, Fred Bellott, who is now my Associate Director at Memphis State University, has just completed an important publication in state evaluation design that will be of interest to each of you. I know that he will send you complimentary copies if you will request them.

As a final thought in projecting future objectives, continue to relate your Project to other developmental activities being conducted; continue to take initiative; and continue to get together as often as you can to exchange ideas. Also, I would like to challenge you not to disregard the "why" question. Keep it foremost in your mind as you try to answer the "who," "what," "when" and "how" questions. Our efforts must result in improved educational services to people when we measure the effectiveness of the systems that we design.







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By the Hon. the Attorney General  
in answer to a question  
asked by the Hon. the Member  
for the County of ...  
on the 11th of ...

The Hon. the Attorney General  
said that he was sorry  
that he was unable to give  
a more definite answer  
to the question.

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